The Pedagogical seminary

Granville Stanley Hall

EDUC.
LIBRARY

EDUC.
LIBRARY

THE PEDAGOGICAL SEMINARY.

AN

INTERNATIONAL RECORD OF EDUCATIONAL LITERATURE,
INSTITUTIONS AND PROGRESS.

EDITED BY

G. STANLEY HALL,

President of Clark University and Temporary Professor of Psychology and Education.

VOL. I.

1891.

WORCESTER, MASS.:
PUBLISHED BY J. H. ORPHA.

L11
P36
v. 1
EDUC.
LIBRARY

Copyright by
G. STANLEY HALL.

56275

SUBJECT INDEX.

Academic Titles, Cheap, 43
Administration (Primary Schools in France), 74
Adolescence, The Study of, 174
Adolescents, Moral and Religious Training of Children and, 196
Agricultural Schools in Europe, Notes on, 272
Anthropological Investigations in Schools, 225
Anthropological Laboratory at the late International Health Exhibition, 248
Anthropometric Instruments, On Recent Designs for, 248
Anthropometry, 246, 248, 249, 279
— School Life in Relation to Growth and Health, 117
— Growth of Children (U.S.) 298
Architecture, Educational.
— Plans, etc., 432
Argentine Republic.
— Quelques Mots sur l'Instruction Publique et Privée dans la République Argentine, 108
Art Education, 442
Art and Music.
— France. Le Prix de Rome, 115
Association, Mental, Investigated by Experiment, 250
Athletics.
— Buildings and Grounds in Germany, 426
Attendance, Compulsory (in France), 73
Austria.
— Budget of Ministry of Education, 379
— The New University of Vienna Building, 381

Belgium.
— Catholic University of Louvain, 289
— De la Réform de l'Enseignement Superieur en Belgique, par Ad De Ceuleneer et Ch. Dumercy, 111
— The State and Intermediate Education, 287
— State of Primary Instruction in, 288, 289
— University of Brussels, 286
— University Laws, etc., 289
— University Statistics, 289
Botany, The Teaching of, 476
Boy Life in a Massachusetts Country Town a Quarter of a Century Ago, 232
Boys, Rudimentary Society Among, 237
Buenos Ayres.
— Education, Laws, etc., 296
Building Plans, List of, with Cost, 435
Buildings.
— Chemical Laboratories, 383
— College and University, in the United States, 361
— Educational, 425
— Gymnasia in Germany, 426
— Medical Clinics, 386
— Ophthalmological, 388
— School-houses, 427, 429, 431, 432, 433

Canada, Higher Education in, 41
Certificates.
— French Primary Schools, 94
Chemical Laboratories.
— Notes on Buildings, 383
Children's Collections, 234
Children's Drawings, 445
Children, Experiments in Testing the Character of School, 251
— The Growth of, 246
— How to Study Them, 251
Children's Lies, 211

Chile.
— National Pedagogical Congress, 290
— Normal School of Santiago, 292
— Report of Minister of Justice and Public Instruction, 1890, 290, 291
Clark University, Recent Acquisitions to the Pedagogical Department of, 498
— Reports, 377
College, The, as Distinguished from the University, 107
— (The American) in Relation to Liberal Education, 106
Commercial Schools.
— In Europe, 268
— In the United States, 272
Common Schools, Literature and Notes, 450
Conferences, Pedagogic (in France), 85
Congress, National Pedagogical (in Chile), 290
Congresses, Pedagogical (in France), 87
Conseil Supérieur de l'Instruction Publique, 22
Contents of Children's Minds on Entering School, 139
Country Schools in France, 68
Criminals, Physical and Industrial Training of, 244

Denmark. Overpressure in the High Schools, 245
Degrees (in American Universities), 43
Degree, Requirements for the Doctor's (in Germany), 262, 264

Ear-Mindedness, Eye-Mindedness and 253
Editorial, 119, 311
Education, 119
Education in Greece, 437
Education and Heredity, 463
Education, Laws, etc. (in Buenos Ayres), 296
Educational Progress, 311
Educational Reforms, 1
Elementary Education, 62
Eye-Mindedness and Ear-mindedness, 253

Federation of Universities in Canada, 41
Feeble-Minded Children, 297
Foreign Miscellanies, 299
France.
— Administration and Inspection, 74
— Art Education, Reports on, 444
— Associations of Former Pupils of Normal and Primary Schools, 100
— Associations of Former Pupils of Upper Primary Schools, 101
— The Orphanage of French Primary Education, 101
— The Certificate of Elementary Primary Studies, 94
— Classes of Adults and Apprentices, 69
— Classes of Primary Schools, 67
— Country Schools, 68
— Ecole des Hautes Etudes, 269
— Ecole du Livre, 115
— Ecole Libre des Sciences Politiques, 331
— L'Ecole Pratique des Hautes Etudes, 329
— Educational Buildings, 425
— Education in Morals and Civil Government, 471
— Educational Reforms, 8
— Examinations of Teachers, 81
— Financial Legislation, 73
— The French Young People's Union, 100
— The French Alliance, 100
— Government Prizes and Stipends to Pupils and Teachers in Lower Schools, 95
— Higher Education, Recent Literature of, 19, 327
— Hour Plans, 456
— Laws of Primary Education, 72
— La Libraire Scolaire, 89
— Lycée, 275
— Manual Training in, 276
— Musée Guimet, 334
— Les Musées Scolaires, 92
— The National Professional Schools, 69
— New Educational Buildings, 432, 433
— The New French University, 327

— The New Sorbonne Building, 380
— Normal Schools, Organization and Administration of, 76
— Obligatory Education, 73
— Pedagogic Conferences, 85
— Pedagogic Libraries, 89
— Pedagogical Congresses, 87
— Pedagogical Museums, 91
— The Polytechnic Association, 98
— The Philotechnic Association, 99
— La Ligue Francaise, 99
— The General Society of Teaching and Education, 99
— Private Schools, 71
— Le Prix de Rome, 115
— The Protestant Society for the Encouragement of Primary Instruction, 98
— Public Instruction under the Third Republic, 465
— The Recontructed Primary School System, 62
— Reform of the Secondary Schools, 275
— School Expositions, 90
— School Funds, 74
— School Libraries, 89
— Societies of Primary Education and Elementary Instruction, 97
Superior Normal Schools.
— Fontenay aux Roses, 78
— Saint Cloud, 79
— Ecole Normale, 80
— Teachers —Appointment, Discipline and Pay, 85
— Teachers' Mutual Aid Societies, 101
— Training of Teachers, 76

Games and Plays of Children, 299
Geography.
— Exhibition of the Brooklyn Institute. 475
— History of Methods of Instruction, 415
— A Plan for the Grades of the Common School, 476
Germany.
— Academic Societies at Universities, 376
— Aid to Students, 260
— Chemical Laboratories of Bonn and Berlin, 434
— Common Schools, Literature and Notes, 450
— Degree, Requirements for the Doctor's, 262, 264
— Educational Buildings, 425
— Educational Reforms, 1
— Gymnasia and Athletic Fields, 426
— Higher Education, 335
— Higher Education, Recent Literature of, 24
— Hour Plans, 454
— Intermediate Education, 59
— Learned Professions, Overcrowding of the, 478
— Die Naturwissenschaftlichen und Medicinischen Staatsanstalten Berlins, 341
— The New German School, 13
— The New Kaiser-Wilhelm University Buildings at Strassburg, 382
— Pedagogical Seminaries, The Higher, 390
— Die Physikalisch-Technische Reichsanstalt, 335
— Physiological-Chemistry Institute, Tübingen, 434
— Plan for a Middle Class School, 267
— Professors, List of, with Titles of their Publications, etc., 265
— Public Baths, 425
— Zur Reform der Deutschen Hochschule, 343
— Reforms in Legal Education, 348
— Die Reform der Universitäten, 345
— Royal Academy of Sciences, Berlin, 342
— Scholarships, Fellowships, Stipends, etc., 260
— Technical High School Building at Charlottenburg, 381
— Universities, 347
— University of Berlin, Statutes of the, 372
— University of Freiburg, 431
— Universities, Rules and Forms in Administration, 379, 380
— Vacation Courses at Universities, 461
Goverment (Federal and State), Aid to Higher Education in the United States, 36

Great Britain.
— Reforms in Public Schools Suggested, 281
Great Britain and Ireland.
— Scientific and Learned Societies of, Year Book of, 281
England.
— The Albert University, 349
— Universities, 350
— Cambridge University, Ordinances of, 375
— Cambridge University Statutes, 373
— City of London School, The Building, 433
— Higher Education in, 349
— Medical Education, 353
— National Education, 279
— Owens College Chemical Laboratories, 434
— Oxford University, Ordinances of, 375
— Oxford University Statutes, 373
— The Training of Teachers, 409
Scotland.
— The New University Building at Glasgow, 381
— Report to the Trustees of the Dick Bequest, 110
— University Letters from, by Justin Winsor, 108
Greece, Education in, 437

Higher Education.
— (Germany), 335
— Recent Literature of, 19
— (United States), 354
Holland.
— Higher Education in, 30
— Intermediate and Higher Education in, 295
Hour Plans.
— (In France), 456
— (In Germany), 454
Hygiene.
— Health of School Children, 297

India.
— Education in, 453
— Indigenous Education in the Panjab since annexation and in 1882, 277
— Report of the Indian Education Commission, 277
Infants, Notes on the Study of, 127
Inspection.
— (Primary Schools in France), 74
Intermediate Education.
— Recent Literature on, 53
— Literature and Notes on, 454
Intermediate and Higher Education (in Holland), 295
International Scientists' Directory, The, 282
Italy.
— Regulations concerning Public Instruction, 285
— Schools (in 1878), 284
— Secondary and Superior Instruction, 286
— Universities in, 282
— Zoological Station at Naples, 338

Japan.
— Higher Education in, 33
— The Imperial University, 369
— System of Education in, 369

Land Grants, 34
Language of Children, Notes on Studies of the, 257
Laws of Primary Education (in France), 72
Learned Professions.
— Overcrowding in Germany, 478
Legal Education (in Prussia), 348
Libraries for Teachers (in France), 89
Literature, 229
Literature of Higher Education, Recent (France), 327
Literature and Notes.
— Academic, 478

Manual Training (in France), 274
Maps, Educational (Russia), 296
Marks for Bodily Efficiency, On the Principle and Methods of Assigning, 254
Mathematics.
— Literature and Notes, 447

Medical Education, 44
— (In England), 353
— (U. S. and Canada), 52
Medical School, Harvard, 51
Medical School and University, Some Advantages of the Union of, 50
Mental Fatigue, Remarks on Replies by Teachers to Questions Respecting, 253
Mental Imagery, 252
Mental Statistics, A Study in, 253
México.
— Catholic College in, 296
— Educational Statistics, 291
Miami University.
— Inaugural Address by President E. D. Warfield, 105
Miscellaneous, 482
Modern School, The Unnaturalness of the, 471
Moral and Religious Training of Children and Adolescents, 196
Museums, Pedagogical (in France), 91
Museum of St. Petersburg, The Pedagogical, 116
Music and Art.
— France, Le Prix de Rome, 115

National, Scientific and Educational Institutions of the U. S., Origin of, 354
National University, A, in the United States, 44
New German School, The, 13
New Jersey, The College of. The Inaugural Address of President Patton, 107
Normal Schools.
— In France, 76
— Higher, in France, 78
Notes, 102
— and Digests, 257
Observation of Children at the Worcester Normal School, 219

Observations of Children. 229–232, 234–237, 251, 257, 267, 279, 296, 445, 467, 477
Observations on College Seniors, 238
Orbis Pictus, The, of Comenius, 108
Overpressure in the High Schools of Denmark, 245

Pedagogic Conferences (in France), 85
Pedagogical Congresses (in France), 87
Pedagogical Museums.
— St. Petersburg, Russia, 116, 292
Pedagogical Pathology, 267
Pedagogy, General Literature and Notes on, 461
Physical and Industrial Training of Criminals, 244
Physical Training in American Colleges and Universities, 239
Physical Training Conference 241
Primary Education, State of (in Belgium), 288, 289
Private Schools (in France), 71
Prizes and Stipends to Teachers and Pupils in Lower Schools in France, 95
Psychology and Education, 468, 473
Psychology, Text Book of. Lehrbuch der Erziehung des Unterrichts—Leutz, 265

" Rembrandt als Erzieher," 61
Rochester University.
— Inaugural Address of President David J. Hill, 106
Russia.
— Educational Maps of, 294
— The Pedagogical Museum of St. Petersburg, 116, 292
— Reform of Universities in, 363

Siberia, Higher Education in.
— University of Tomsk, 32
School Collections.
— (Les Musée Scolaires in France), 92
School Excursions, 255, 467
School Expositions (in France) 90
School Funds (in France), 74
School Furniture, etc., 427, 429, 431, 432
Schoolhouses, 427, 429, 431, 432, 433
School Libraries (in France), 89
Science, A Plea for Pure (in U. S.) 280

Seminaries, The Higher Pedagogical, in Germany, 390
Seminary, 111
Societies, Academic, at German Universities, 376
— (of G. B. & I.) Year Book of Scientific and Learned, 281
— Learned, Attached to Universities, 375
— of Primary Education in France, 97
Spain.
— Public Instruction, Statistics of, 295
Special Pedagogy.
— Literature and Notes, 475
State Aid to Higher Education in the U. S. 36
State and Intermediate Education (in Belgium), 287
Story of a Sand Pile, 229
Sweden, Intermediate Education in, 53
Switzerland.
— Chemical Laboratories at Zurich, 435
— Degree, Requirements for the Doctor's, 262
— The Polytechnic at Zurich, 435

Teachers.
— Appointment, Discipline, Pay (in France), 85
— Examinations of (in France), 81
— Training of (in England) 409
— Training of (in France), 76
Technical Schools.
— France—École du Livre, 115
Text Books (in France), 89
Tomsk, University of, 32

United States.
— America, Higher Education in, 34
— American Schools and Training Colleges, Notes on, 454
— American University Degrees, 43
— American Universities, The Future of, 42
— The American University. When, Where and What Shall It Be? 480
— Civil Service Commission, Reports of the, 360
— College and University Buildings, 361
— Commercial Schools, 272
— Geographical Exhibition of the Brooklyn Institute, 475
— Geographical and Geological Surveys, 357
— Geography, Plan for the Grades of the Common School, 476
— New York School System, Origin and Development of, 452
— Public Instruction in, 292
— Smithsonian Institution, Reports of the, 356
— University Education, 481
Universities (in England), 350
Universities and Learned Societies, 375
University.
— Buildings, 380
— Chronicles, 370
— Evolution of the, 107
— Extension (in U. S.) 281
— The Ideal (in France), 21
— Laws, etc. (in Belgium), 289
— Letters from Scotland, by Justin Winsor, 108
— A People's, 106
— Statistics (in Belgium), 289
University Statutes.
— Berlin, 372
— Cambridge, 373
— Oxford, 373
University of Virginia, Thos. Jefferson and the, 102

Vacation Courses at German Universities, 461

William and Mary, The College of, 104
Williams College.
— Inaugural Address of President Franklin Carter, 107

AUTHORS' INDEX.

Adams, Herbert B. 102, 104
Alcorta, D. Amancio, 296
Allen, James, 41
Amante, Bruto, 286
Aschrot, B. F. 350

Bacon, L. W. 43
Baumgart, Max, 260, 262
Beaussire, Emile, 465
Bigg, Heather, 279
Billroth, Th. 44, 386
Binet, A. L. F. 296
Blackmar, Frank W. 36
Boas, Franz, 225
Bolton, H. C. 299
Bowditch, H. P. 51, 246, 279
Bryand, Mrs. Sophie, 251
Brzoska, Heinrich G. 390
Burgess, J. W. 480
Burnham, W. H. 13, 174, 219, 390
Burwash, N. 41
Bütow, A. 452

Cajori, Florian, 448
Calkins, N. A. 477
Carter, Franklin, 107
Cassino, S. E. 282
Cattell & Bryant, 250
Ceuleneer, Ad. De et Dumercy, Ch. 111
Chassiotis, G. 410
Chesneau, E. 442
Comenius, 108
Cotterill, C. C. 281
Cubas, Antoine Garcia, 291

Döring, E. 267
Draper, A. S. 452

Eddy, Henry T. 447
Errazwicz, Francisco Gonzalez, 292

Fitch, J. G. 454
Flach, Johannes, 345
Frick, O. 390
Frick O. and Meier, H. 390

Galton, Francis, 248, 252, 253, 254
Girard, Paul, 437
Goode, G. Brown, 354
Göring, Hugo, 13
Gussfeldt, Paul, 59
Guyau, M. 117, 463

Hall, G. Stanley, *Ill.*, 1, 119, 127, 139, 196, 211, 229, 232, 311
Hallberg, E. L. 21
Halle, Professor C. 28
Haufe, E. 118
Haupt, E. 347
Hausknecht, Dr. Emil, 33
Hartwell, Edward M. 239
Hertel, ——. 245
Hill, David J. 106
Holland, A. 450
Horstmann, A. 451
Howard, George H. 107
Hunter, Sir W. W. 453

Jastrow, Joseph, 253
Johnson, John Jr., 237

Kekula, R. 265
Key, Axel, 117
Kirkpatrick, E. A. 238
Knight, George W. 34

Lauer, M. 289
Laurie, S. S. 110
Léautey, Eugène, 268
Leitner, G. W. 277

Leutz, Ferdinand, 265
Liard, Louis, 19
Lomberg, Van O. 255

Macunel, Bruno, 473
Martello, T. 282
McMurry, C. A. 476, 481
Meyer, J. B. 343
Meyer, Lothar, 29
Mézières, A. 471
Morris, G. S. 481
Mowry, William A. 44

Niemeyer, Max, 468
Nûnez, J. Abelardo, 290, 292

Oberbreyer, Max, 264

Patton, Francis L. 107
Peckham, George W. 298
Pietzker, Fr. and Treutsein, P. 478
Potter, J. R. 415
Preyer, W. 13, 117

Rauch, John H. 52
Réal, Ferdinand, 275
Reigart, J. F. 409
Rein, W. 390
Robinson, W. J. 449
Rowland, H. A. 280

Safford, T. H. 447
Salicis, A. 276
Sallwürk, E. Von, 266
Sanford, E. C. 257
Schiller, Hermann, 390
Schurman, J. G. 106
Skidmore, Sydney T. 281
Strack, Max, 284
Stoerk, F. 348
Strümpell, Ludwig, 267
Swift, Morrison I. 481

Taylor, E. K. 444
Thomas, F. S. 43
Tolstoi, Leo. N. 113

Ufer, Ch. 297
Uhlig, G. 454

Vanderkindere, L. 286
Venn, John, 249
Verdun, Paul, 275
Vernes, M. 30
Voss, P. 390

Warfield, E. D. 105
Warner, Francis, 251
Welch, Wm. H. 50
Wendt, Hermann, 467
Wey, H. D. 244
White, Andrew D. 42, 480
Whitney, J. D. 357
Wiese, L. 390
Wigge, H. and Martin, P. 471
Wilmarth, A. W. 297
Wiltse, Sarah E. 234
Winsor, Justin, 108
Witmer, Leighton, 461

Zubiaur, J. B. 108

Vol. I. No. 1. \$4 a Year, (3 numbers) \$1.50 a Copy.

THE PEDAGOGICAL
SEMINARY.

AN INTERNATIONAL RECORD OF EDUCATIONAL LITERATURE, INSTITUTIONS AND PROGRESS.

EDITED BY

G. STANLEY HALL, Ph. D., LLD.

President of Clark University, and temporary Professor of Psychology and Education.

JANUARY, 1891.

PAGE.
I. EDITORIAL, ... iii–viii
II. EDUCATIONAL REFORMS, EDITOR, ... 1
III. THE NEW GERMAN SCHOOL, W. H. BURNHAM, Docent in Education, Clark University, 13
IV. RECENT LITERATURE OF HIGHER EDUCATION,
  1. FRANCE, ... 19
  2. GERMANY, ... 29
  3. OTHER EUROPEAN COUNTRIES, ... 30
  4. NORTH AMERICA, ... 34
  5. MEDICAL EDUCATION, ... 44
V. RECENT LITERATURE IN INTERMEDIATE EDUCATION, ... 53
VI. ELEMENTARY EDUCATION—
  The Reconstructed Primary School System of France, 62
VII. NOTES, ... 102–118

WORCESTER, MASS.
Published by J. H. ORPHA.
London: KEGAN PAUL, TRÜBNER & CO. *Paris;* F. ALCAN. *Berlin:* MAYER & MÜLLER.
Copyright 1891, by G. STANLEY HALL.
Entered at the Post Office of Worcester, Mass., as Second Class Matter.
Published trimestrically, or quarterly except the Summer Number.

EDITORIAL.

Seminary and laboratory are now perhaps the noblest words in the vocabulary of higher education. The former is now coming to mark the latest, closest, and most fruitful contact of the best instructors with the most advanced learners. It inherits and perpetuates the best traditions of the ancient Grove and Porch, the platonic dialogue and esoteric mysteries. It is the pedagogic adytum which only the few fit must enter. Here teaching and learning sometimes become a passion. Here the great masters have inspired, and then passed on the sacred torch of pure science to the their chosen disciples. When German universities were growing dry and formal, it was the seminary that unfolded new methods and re-animated every humanistic department in which it obtained a foot-hold, and many of the most important recent advances, especially in the fields of history and antiquities, are direct products of seminary impulses. Even the method of lectures, although by no means superseded as yet, is sometimes subordinated and made tributary to seminaries. In France still more recently, where nearly all higher instruction was given in the form of lectures open to the general public, it was seminaries under several names, which have inspired several thousand of the best trained and most gifted future leaders to a devotion to pure science unparalleled in the history of that country. The seminary movement had inveterate prejudices to overcome, and was accused of being cloisteral, mystic and secret; but in the words of a French leader, it has shown how great a light and heat could be evolved by a policy of university concentration, which was the exact opposite of university extension, which excluded the public and focused all its care upon the few best. The entire success of a seminary depends on the rigor with which all but the few who are able and fit to be active participants are excluded. A single feeble or untrained man mars its tone.

A seminary is not a library club where books are shown and described, or reading courses marked out; it is not a smoke-talk with subsequent questions, nor a conference for joint conversation on a pre-announced subject, nor a lyceum for debate, nor a series of meetings for reading select authors in common, or reporting on books or current journals, nor an academy where the results of original research are reported, nor a gathering where students read their own independent studies to each other. It is a new synthesis of select elements of all these, but subordinated to and unified in an higher main purpose and method. While such seminaries exist in other subjects there is none in the world to-day in education that is at all adequate or worthy, and this journal and the department it represents marks in its first number only the foundations of the high pedagogical seminary we have undertaken the laborious task of developing, and the later stages of the unfoldment of which we hope future numbers will show.

While seminary methods vary somewhat in different subjects, they are in the main clear and obvious in this field, and should embrace two main lines of work.

I. The comparative study of contemporary institutions and literature in all leading countries. No American library has ever gathered the important records, literature or journals of education in other lands, and the Bureau of Education has lacked funds to fill the gaps, many and vast, in its collections, although its books are numerous enough, had they been wisely selected instead of being mostly composed of what happened to be sent in by way of exchanges and otherwise, to fill all our requirements twice or thrice over. The bureau is without any such catalogue as makes every resource of the smaller library of the French museum so readily accessible to every comer. We have thus been obliged at much labor and expense to begin such a collection for ourselves. Both in this work, and to supplement our temporary deficiences, we have been kindly and generously aided by brief loans, and otherwise not only from the Bureau, but from the library of Harvard University, to the directors of both of which The Seminary takes great pleasure in expressing its obligations. In this respect, we hope soon to be independent; thanks to the wisdom and beneficence of the founder and trustees of this university.

Another difficulty, serious yet temporary, arises from the present unparalleled isolation of our country in educational matters. When county, state, interstate, and then national teachers' meetings were first proposed in this country, they were all resisted as useless, unsettling, or as tending to foster a critical conceit. One city superintendent said that the best teachers would stay at home, do what they were told, and not go in quest of new and other ways. No one now doubts the great utility of these associations. There are still some—always those who do not know them—who disparage a still further extension of pedagogic interest and knowledge to international fields. While nearly every country in Europe and even South American states send experts to other lands, our own included, to study and report at state expense on every new departure in every phase and grade of education, as strategists spy out every new military movement of a rival; while no professor in an university is respectable if he does not know the latest discoveries in his subject in all lands; while no industry is secure, unless it follows even at great expense the markets and processes by which it might be short-circuited and undersold in other lands; while most of the best and most lasting that has been either done or said in our educational history in past or present is by those who take this broad comparative view the method of which is now the soul of every science; it is plain that the first step is to launch every serious student of education upon this way and field of work. He must be put in touch with the best that is being done and said in other portions of his own and in foreign lands, which must be utilized as experiment-stations for his benefit. It is hard to say which is saddest, the waste of attempting expensive educational experiments which have been proven useless or impracticable elsewhere, or the timidity and conservatism which refuses to make departures already approved as easy, and of great utility and economy. The repertory of devices, methods, ways, means and ideas should be copious, and only then will the student learn to avoid the folly or affectation of imitating what can succeed only in a different environment of race, government, creed, etc., or of refusing to utilize what is as practicable everywhere as a mechanical invention because it is of foreign origin. In view of our isolation such information is our first and greatest need. Our educational leaders have had no time to acquire this knowledge, and for the editor his work is an attempt at self-education for the better discharge of future duties.

A third obstacle in the way of such work is the undue prevalence of hard and settled dogmas of both the philosophy and method of education. Its problems are too often discussed and even settled here far too abstractly. Is there a philosophy, or a science of education; is it a profession; education from the standpoint of Hegel, Spencer, and lately in this country Herbart; is an idealistic standpoint in education pantheistic in its tendency or is the standpoint of scientific psychology materialistic; one condemns object lessons or school museums because they savor too much of the empyricism of Locke; another would turn out or restore grammar because its distinctions are historically too closely associated with Aristotle's categorics; normal teachers too often develop much of their work from abstract theories of analysis and synthesis and their relations; or the home, state and church are made the abstract basis of deductions from which practical questions are judged; the study of children is useless because it is a part of empirical psychology which is but a *branch* of philosophy;—these are concrete type-cases which might be greatly extended, and each illustrated by a list of recent papers and addresses. This narrows, and is an education in prejudices which has three bad results. It cripples good men by giving them "apperceptive organs," or centres of educational interests that are artificial and useless, and breeds a distate for patient and hungry all-sided search after what *is* in fact and truth, and begets ignorance of the partial truth in all opposing theories. There is no philosophy or science yet developed that is large enough to cover education. To rely on any one or all of these is a sign of that precocity that marks sterility in a student, and of unpedagogic methods in teaching education—the worst taught of all subjects—on the part of its professors.

The natural method, then, in the higher study of education is to begin by gathering a rich material of ideas, institutions systems in the past, but especially living and present, and making this carefully prepared collection the basis of our discussions which cannot then fail to be definite and meaty, and will not go to seed in dogmas, formulæ and abstractions. This collection must be copious, selected with great care, and the digests or reports upon each book or paper must be a perfect minature of the original, embodying its every new and salient phrase and idea, but boiled down to the utmost consistency. It ought thus to strive to be more striking than the original itself where the transitions are more gradual and the whole not seen in all its proportions at once, and to make it unnecessary for all but very special purposes, and for these to serve as a competent guide or finder. This work is generally done so wretchedly that the invaluable service such work can be made to render is now almost unknown. Our first endeavor has been to make these digests as perfect and as attractive as possible, and the merit of our first numbers depends upon our success in this effort. Ability to do this well should be the first training in the pedigogical seminary, and these digests are our data, our museum of specimens on the basis of which pedagogic study must begin, and out of which such science or philosophy of education as is possible is to be evolved with constant reference to hygiene, psychology and anthropology.

This must be distinguished as elementary, higher, technical, industrial, normal, state or private education, etc. It should cover buildings, curricula and methods in each subject, including music and fine arts, hygiene, supervision and inspection, books both for teachers and pupils, and illustrative apparatus, of which though we accept no advertisements no superior specimen should go unnoticed, the training of the blind, deaf, idiots, criminals and other defectives, the three learned professions, the relations between government and science, and the education of civil servants, the history of education, libraries, individual educational leaders, and special institutions, and also, presented in the same concise and objective way, the current ethical, philosophical and psychological ideas and theories. This material, which represents the field of this Journal, must be grouped either index-wise as above, or by countries, or following the stages of the development of the child, or in any other individually preferred scheme or system. The main point is that every seminary student should have *all* the material which he has gathered or other members have contributed to the common pool arranged in a lecture book, or in some other way, so that he may ever after give new matter its proper place beside that with which it is most closely connected, and be able to refer at once at any time to what he has. These printed abstracts should all appear by the aid of scissors and paste in their place with the rest. Perhaps the digests in the Journal of Psychology, which were made on the same plan and with the same purpose have in no way done better service than in thus bodily enriching the lecture books or notes of young professors during the critical first year of their academic activity.

II. These seed thoughts thus planted in the seminary must take root and grow into the practical forms of plans for constant educational improvement under the stimulus of discussion, comparison, visitations of institutions and the constant infusion of philosophy as literature rather than as dogmas, and with constant reference to the natural history of the child and youth. This periscope of key thoughts and words must be not only read but studied. This stage of the work must be present from the first, but will be further developed and described later, and we trust be manifest in printed treatises. So far nothing has exceeded the interest, stimulus or profit of the discussions as to what subjects were ripe or opportune for treatment, and how to study and to present them.

THE SEMINARY thus attempts this hardest, most expensive and unremunerative work in the belief that it is the chief need in the present distracted, isolated and disjointed state of both higher and lower education in this country. It addresses the few and not the many, and it is hoped may serve the needs and interests of the following classes:

I. Prominent laymen, such as trustees, legislators, editors, professional men, and men of affairs who take an intelligent interest in education and would see the best methods of business and common sense applied in this field. From this class have proceeded most of the best educational reforms.

II. Administrators, especially university and college presidents, and state and city superintendents, who with their great responsibilities often lack time to seek original sources of information.

III. Professors of pedagogy and principals and teachers in normal schools, who rarely read foreign languages well or have access to the literature they would most profit by.

IV. The professors and students in the educational department of this university, in the scheme of work of which this Journal has a special part.

EDUCATIONAL REFORMS.

One hundred years ago a remarkable story appeared in Europe. It was prolix after the fashion of that day and is now rarely read. Yet its characters and action were as real and as new in fiction as Kipling's best, while the author's passion for moral and social reforms was as all controlling as Tolstoi's. It was a tale of homely life in a Swiss village, of peasants who beat their wives, and of dirty children who stole potatoes, and only on gala days had the cream left on their milk. The good preacher was growing duller, the doctor more quackish, the schoolmaster more mechanical. The squire, who also kept the beer house, was getting every one in his debt and extracting and using for his own wretched ends all domestic secrets. There was the gossip, the hypocrite, the liar, the fool, the sot, and everywhere increasing superstitution, scandal, intrigue and vice.

But there was one good woman in this dismal hamlet, Gertrude, the mason's wife, who taught her children cleanliness, courtesy, maxims, hymns, prayers and simple industries with such devotion and success that the neighbors begged that their children might come too, and soon began to come to see for themselves. An old nobleman visited her home-school and found a real vocation in starting a school himself. The pastor grew interested, and realized that his sermons had been dry, and began to preach in earnest. The spirit of home life and mutual improvement appeared. The beer house ceased to be the centre of the village life. A few citizens met weekly to discuss the larger educational questions of public and private weal. At length a Royal Commission was sent to study Bonal, which had become the thriftiest village in the realm, and reported that they had discovered here the true principle of reform, prosperity and universal government in education, with Gertrude's school at the root of all.

For Bonal is the world. All its degradations are but the natural offspring of ignorance, and Gertrude is the good teacher by whom alone society, state and church can be regenerated. This tale of Pestalozzi's shows us what a simple and unlearned man can do if he is in earnest, and if his cause is great. It was read everywhere; it was wept over; royal personages came to see the author, and gave him presents and decorations, and many greater men than he have since lit thei torches at the fire he kindled.

Sixteen years later, in 1806, the power of Prussia was shattered at a blow by the battle of Jena. Its army was swept away; its allies, industries and trade gone. The country was impoverished and exhausted and its capital garrisoned by French soldiers. Its soil had never been fertile nor its spirit practical. Its military situation, with strong nations on all sides, was the worst in history and its record had shown more discord than unity. The race had never felt such humiliation and the future had never seemed so dark. But the German stock was still vigorous and on every hand the cause of this unexpected collapse was explained. Scharnhorst began to plan a comprehensive reorganization of the military system on its present basis. Stein set about reconstructing the land laws and the status of the peasants. Jahn founded everywhere his patriotic *turner* societies and preached again the gospel of ancient Greece, that only strong muscles can make men great and nations free. But the key-word which guided and unified all was spoken by Fichte in his so-called "addresses to the German nations," which were given in Berlin every Sunday evening for an entire winter to large audiences of the best classes, with Napoleon's sentries at the door, and his spies scattered through the hall. He said in substance this:—

We have yet left us German bodies, large, strong and healthy to the core, a marvellous language all our own and not agglomerate of many tongues like English, and a pure blood never mixed with other races. We have wrought out the Reformation, the greatest task the human spirit has yet achieved, and our ancestors call to us not to let the work they died in doing be in vain. We carry the light and the hope of the world. If we sink, freedom and humanity sink with us. There is one plain and only way for patriotic recreation. It is not primarily by armies or legislation, but we must rise like Bonal by the slow and sure processes of national education. We must live for our own children, training their bodies and minds as was never done in the world before. Schools have been the one product in which the German spirit has already excelled. We have set the human spirit free, have preached, taught, lived, and believed in ideas and ideals. We must make education our supreme task; our duty of duties. We must realize the platonic republic where the wisest ruled and education was the chief problem of statesmanship. This policy must be our destiny. Our leaders must be priests of Truth and in her pay. They must think fearlessly in all directions; must investigate and discuss, do and suffer all in the world's great holy cause of science and learning. To this end he invoked all ranks and classes. For thus not only the united Fatherland, long hoped for, long delayed could become real, but men of a higher type and order of existence than had yet appeared would be developed.

Thus Fichte, idealist and enthusiast, spoke and was heard as no man had spoken or been heard since Luther. For him education was the one divine cause in the world; a new dispensation of religion itself. In accordance with his conceptions, but by far more practical men than he, the University of Berlin was founded and a national policy was defined making education the test of all. Along these lines the Fatherland has become the most effectively governed state, and its army the strongest since ancient Rome. Just as the Reformation slowly pervaded other lands so Germany has set the educational fashions for most nations of continental Europe, not to speak of Japan and South America. Her methods and ideas have been especially transforming since the war of 1870 made manifest the strength this policy had developed in half a century. Her conquests are now spreading to the world of industry and trade, and France has shown her true greatness by wise imitation of her conqueror.

We can not study too carefully here the chief feature of this great educational state. Its magnificent campaign against ignorance opens with matchless vigor. Every parent must send his child to school from six to fourteen—in many places they still pay a trifling monthly fee—or he is, as Luther held, an enemy of the state. He might almost as well refuse to pay taxes or fight an invading foe. In 1888 of about five million German children only 5145 were absent from school without cause. In Berlin in the same year 14 boys and one girl of school age evaded the law, but this result was secured by fining 1020 parents and arresting 1088. Illiteracy proper is practically extinguished.

In this country 19 states have no compulsory law at all in 1890, and where it exists it is rarely enforced. In 1888 seven per cent. of the total white male adult population, and eleven per cent. of the adult white female population, could not read or write. In 1880, one sixth of the voters in the former slave states could neither read or write. Had their statistics been computed for children of ten, as is often done, or included the colored population, or been based on tests as rigidly enforced as in Europe, it is needless to say that the results would have been far sadder.

Again, every teacher of even the lowest grades in Germany must have had three and in some provinces four years of professional normal training, and at least one, and in some places two, trial or practice years. Here, in 1886, but nine, and those among the best states, reported on this point, but even in these only one teacher in twelve was a Normal graduate, and one-fourth and probably more of all our teachers leave the business every year. Again, and perhaps more important, the syllabus of each subject, and in less degree the curriculum of subjects, is central and indeed canonical. All text books must be made on its pattern or they are not licensed. A capital illustration of syllabus, standard, programme, grammar or norm, as it is variously called, is at hand in the new and much discussed code in geography for the Cadets in 1889. It contains 40 pages and embodies all that the highest science or the Universities, in conference with the best pedagogic wisdom, can do for boys in this field. Besides the topics in careful order it has copious references to hand books, maps, etc., which the teacher must have and work up. By such means it is sought to make courses of study rich and meaty, condensed and unified, so that the teacher shall be absorbed in and proud of his calling; that children shall have interest in their work, the absence of which is one chief cause of over-pressure, and to save one if not two years in passing up the grades. If the traditions of the trivium and quadrivum still incline to rigidity in the German curriculum, we are in danger of the extreme of laxity and confusion. Here it is often tediously attenuated, shaped by text-book makers and tinkered by viewy committee men, a teacher with hobbies, and in a series of cases has been successfully defied in the courts by crochety parents. Other suggestive features of the German system may be mentioned. The sad waste of our religious questions is made impossible by a very simple expedient. Catholic, Jewish and Lutheran teachers, approved or named by these denominations, give religious instruction from school to school to each child in the faith preferred by the parent. Text books in the school room, and text books makers without, are servants and not masters. These books are commonly smaller, fewer, cheaper and their matter often condensed almost to a skeleton, while books for teachers are much more numerous. Small libraries for their use as well as quite large collections of charts, diagrams, specimens and illustrative apparatus are often found in schools of our grammar grade. The 183 school houses of Berlin contain about 100,000 carefully selected books for pupils and teachers. While there are usually class teachers for each grade, many subjects are left with special teachers, and with much gain. The summer vacation is far shorter than with us; hard subjects always come in the morning; school opens at seven in the summer and eight in winter; there is almost no marking; less loss in petty accuracy, reviewing; and less in passing from one class of school to the next higher. Lastly, supervision is more efficient. In Berlin, besides the school board of thirty-one members and the eight trained inspectors, over two thousand of the best citizens serve as ward committee-men.

At the age of 14, having satisfied the law, another powerful motive to keep on begins to be felt. By doing so two or three years longer every boy can be exempt from two of the three years of military service obligatory for all others. The law specifies for each of the 947 high schools in Prussia at what point in the course this exemption shall be granted. In a gymnasium of the first-class it is reached three years before graduation and without an extra examination. In others it comes one or two years later or at the end of the course, and for still inferior schools an extra examination perhaps or an additional subject or two is required. This standard grades and, of course, greatly stimulates each school.

Again, with each additional year in gymnasium or real school, a new list of official positions in the Government service becomes possible. Each new grade attained qualifies for new and higher posts in the state, bank, railway, postal, telegraph, mining and engineering service. At this point the student may become surveyor, sub-assessor, machinist, department clerk, sub-architect, etc., on passing the state examinations, and many private corporations now follow the government example in exacting educational qualifications for entering their service.

In secondary education the trunk courses tend directly to the University, and there is such unity between the many classes of schools, that no time is lost in passing from one to the other, although technical or industrial schools can be entered at any time. Here, of 230 so-called High Schools in Massachusetts — the only state in the Union that compels the establishment of High Schools — but fifteen sent men to Harvard College in 1888. The High School strives to fit for life rather than for college, often encroaching upon the proper work of the college, as the college too often strives to encroach on the work of the University.

During the last year or two in the gymnasium, the teacher, who has hitherto attended, directed and inspired every step, gradually retires and strives to develop independence and self-direction, to qualify the student for the sudden freedom of the University. The disciplinary stage with its unequalled drill in required work is over, but the multifarious subjects open in the University are not a free lunch. Previous work, the well worn track of academic tradition and precedent, and still more the dreaded state examinations which loom up between the student, and every desired career leave him little choice of studies. No man can preach, practice law or medicine, or enter any high civil offices without a full university training, to say nothing of the many industries that now depend directly upon the state of the highest university science. In this country in 1888, out of every 100 students of theology only 23 were college graduates, as were but 18 per cent. of the law students and 8 per cent. of the students of medicine.

From all this we can understand how serious are all changes in the existing standards and courses. I once listened to a prolonged and able expert discussion in the German parliament as to whether a man must study Greek to become an architect. Such much debated questions as how much Roman law should be required of all lawyers, how much comparative religion and historical philosophy for clergymen, how much physics and botany for doctors, should biology be taught on an evolutionary basis, and now at the instigation of the present Emperor, the exciting question whether schools for the people should not be modified in the direction of the recent Swedish reconstruction, laying chief stress on the education of the body and the study of the mother tongue and its literature —these and many such problems are questions of state.

Last of all, the German student must produce a thesis or essay which should always be published, that the student's, the professors', the University's standing, and thus the real value of its degree may be known. It must always contain a contribution, however small, to the sum of human knowledge, but it is the value of research to the student, in both training and in self-respect, that is chiefly sought. Every man of culture, it is held, must once in his life get beyond all authority, books, traditions, custom or habit, and take a free, fresh, independent look at reality. He must cease to be a passive recipient, escape the insidious self-indulgence of knowing merely, and must do, produce something; and act from scientific insight, conviction, independent resolve, critical testing. It is the University's accolade, stand erect; look about you; be free; that henceforth, whether conservative or radical, orthodox or skeptical, you may light your own way with independent knowledge.

The medieval University was a corporation of scholars vested with exceptional privileges, exemption from toils, taxes and arrest, save by beadles of the University—who tried its members in its own court. Low rates of board and lodging were often fixed by law or edict. There were frequent riots between town and gown, while liberty of teaching and of conduct was often abused. Universities were hot-beds of revolution which Russia has yet learned no better way than to close. But this freedom was always vindicated and the awful circle of the church or state was drawn about them by papal bull or imperial diploma. The German University is to-day the freest spot on earth. Some of them still have their own court and prison, and the municipal police can only demand the pass card of a law offending student. The rector is still exempt from prosecution during office, the professors' private property from taxation, and the student from obligation to attend exercises, and the University elects its own member to Legislature and State Synod. Yet more remarkable is the freedom of opinion. "Across the street from the palace of an autocratic and high church emperor principles subversive of the state and of instituted religion have often been taught with impunity." Baur was not only professor but pastor, preaching with power in the established church while promulgating his well-known mythic theory of the gospel and the early church. God and the existence of the external world have been denied and the universe evolved from pure abstract thought, being, the ego, the will or cosmic gas, and a long list of absurdities, ancient, and even contemporary, which I have gathered but forbear to enumerate here, have been advocated with impunity by German professors. Never was such burning and all-sided curiosity. What is matter, mind, the ego, consciousness? How and for what purpose did they all come to be? What are all the forms of knowledge abstractly possible for thought, of existence possible from being? What is life, will, love, freedom, duty, the state, religion *per se?* All the old forms and laws of beliefs men had lived by were upturned and every possibility of thought was explored in quest of new, deeper, more ineluctable foundations. But the most perfect liberty was never more triumphantly vindicated by its fruits than amidst all this ferment. Shallow, bad ideas have died and truth has always attained power. While weak men have passed through a period of confusion and perhaps some have grown indifferent and sterile, strong natures have only struck deeper root.

Thus freed and limbered curiosity turned toward the past, and nature. Literature, scriptural classic and ethnic, languages, new and old, cultured and savage, history in all its departments have been explored by great and devoted men whose names are household words with scholars. The very soil of ancient states has been spaded and sifted, discoveries, great and small, without number, new standpoints and methods have reconstructed as well as vastly enlarged our knowledge of every nation and tongue, hero and institution of the past. So, too, within the memory of men now living chemistry and biology have been almost created and the sphere of mathematics and physics vastly extended. Science has given us a new and indefinitely larger heaven and earth and, (by its method of self-denying special research, each worker is content to labor long and in quiet to bring a few well-hewn stones to the temple), stands forth as the greatest achievement of human effort thus far.

Nowhere has the passion to push on to the frontier of human knowledge been so general. Never have so many men stood so close to nature and history or striven with such reverence to think God's thoughts after him exactly. His work, no less holy than His word, is dark only with excess of light. Nature never seemed so inexhaustible a reservoir of force, so complex and yet so simple, so lawful in every part yet so lavishly beneficent to man. To those who wait upon her in the laboratory, museum, on the scientific expedition or with microscope or test tube, psychometer or electrode, she never was so voluble nor her revelations so precious.

The philosophical faculty which is devoted to investigation is the heart of the German Universities. About this and deriving their life and light from it are the professional and technical schools. Not only these, but schools of agriculture must, it is held, be located beside and if possible identified with the University or they will grow both narrow and shallow. In Canada theological colleges are moving into Toronto and federating with the University to share its larger life. In Germany, too, unlike England, all scientific leaders are in the universities, where all who would rise must investigate.

Count now all the learned societies and academies of science in Germany, where the best specialists stimulate each other; the magnificent buildings which, to give due dignity to science, equal and often exceeding in cost and magnificence palaces and legislative halls, the archives and contributions, often several for each leading subject and each with series of volumes, containing solely the results of original research the honors and opportunities of many kinds bestowed on leaders. Compare all this, measured by any standard, with the same thing — I dare not say here, but in any other land — and then study all the ways by which the best of all this material filters down in laboratories, university seminaries for gymnasium teachers, by copiously illustrated lectures and text books, by technical, industrial and military schools of rare excellence, and see what it has brought in military success and supremacy, and is now giving in increasing industrial leadership, and we may see realized *the educational state* which lay half revealed in Fichte's dream, which is ruled downward, from the top, where lasting reforms begin.

This educational awakening in Germany after her greatest humiliation by Napoleon is no more remarkable than the movement in France since the catastrophe of 1870, where the transformations have been by far the most profound and the most expensive in educational history. To ensure social order within and to be strong without, it was felt that the new democracy must find a new principle of life in education. The lower schools have already been almost totally reconstructed. They have been made free, obligatory and lay; besides ordinary normal schools as in this country, and the *école normale* for the traing of professors, two higher normal schools solely to train teachers in the lower have been created; 13,000 grammar school museums and 2,683 pedagogical libraries, three model professional schools, a magnificent central pedagogic museum with 30 rooms, model laboratories for chemistry and physics with 20 to 30 tables each a chapter of the subject; a very elaborate system of prizes and medals of many kinds for teachers and pupils of all grades, beginning with stipends for children of 12, and including many traveling scholarships to neighboring countries also for both pupils and teachers; increase of pay for teachers for almost every kind of excellence and culminating in 620 fellowship for the best and most mature university students, who are now the centre of 3,700 students of pure science, a class that could hardly be found in France before; a remarkable and novel system of local and general conference, examination, inspection,—these and many more changes are described in this number of the Seminary.

In higher education reconstructions are progressing more slowly, but are hardly less radical. Twenty new chairs in Paris alone; greatly enlarged liberty of provincial faculties; elaborate and costly new buildings; seminaries and laboratories in place of the old public courses; (a movement of university concentration which, as Liard remarks, is the exact opposite of the English movement of university extension, and which has generated an amount of light and heat in the field of higher studies unknown before in France); the strange new student fraternities; the creation of many positions for young men second only to the titular professors and a great spur to them; the unification of faculties in the same city; and above all, perhaps, new institutions like the École pratique des Hautes Études, the new Conseil Superieur, the École Libre des Sciences Politiques, the Musée Guimet, and many new publications show a movement, the final results of which it will take a generation or more to tell, but already so promising that as France showed her true greatness after the war by learning of her conqueror, so now Germany is in turn learning of France. Within the last few years both general and local governments in Germany, as well as industrial corporations and societies of various sorts, have sent representatives to study and report on various phases of this great educational instauration in France. First, it was said in France that it was not the schoolmaster who made the soldier, but the German University that made the schoolmaster which conquered at Sedan. Now the arts of peace are rapidly adding an additional sanction and motive to higher education hitherto unknown.

In Italy a council of education, composed of sixteen royal appointees and sixteen professors selected from the universities, has grappled with the problem of subordinating fourteen of its universities to the other seven, which latter are being rebuilt with great and sometimes literally palatial magnificence. As, with the policy of doubling for each provincial university all the funds it can raise for itself, the government has gradually acquired practical control of most of them, scholarly and scientific activity has been awakened to new life in nearly all directions, and ambitions of intellectual leadership, as in the best days of the mediæval universities of Italy, are often manifest.

Holland has revised and co-ordinated her organizations of higher education, and established one new university. Sweden has profoundly reconstructed her educational system on a plan that might be called the most severely modern in the world, expelling not only Greek but even Latin from intermediate schools and gymnasia and relegating both to the university, beside Hebrew and Sanscrit, and Denmark is taking steps in the same direction. In 1884, Russia, after prolonged discussion, re-organized her universities. In Great Britain, new provincial universities, and important changes in the others, too many and great to be briefly described here, have been inaugurated. In Germany, thirteen magnificent university buildings make Strassburg, in all departments, the best of all architectural embodiments of the German university ideal, as the new Sorbonne, medical school, and the new Lycée Janson de Sailly are of the French. Halle and Kiel have been, and Breslau is now being, almost entirely rebuilt. New and often magnificent laboratories, libraries, special cliniques and museums at every seat of learning,—great temples of science, as they were called by one of its perfervid orators, Du Bois-Reymond,—and two single buildings costing four million dollars each, show where much of the French indemnity money has gone; and what is far more important, the internal has not lagged behind the external growth. At Budapesth, Ghent, Aix-la-Chapelle, Helsingfors in Finland, and even in remote Athens, magnificent new structures show in what esteem science is now held, and what still greater things she is yet expected to do. Several institutions of new pattern, like the Naples School of Zoölogy, which now trains the best professors for Germany; the London University, which is solely an examining body, and does not teach; the remarkable University of Tokio, the centre and instrument of most of the remarkable transformations in that country,—these and many more show not only how many and strong, but how differentiated, institutions have become in the field of higher education. The great advancements made and impending in medical, legal and religious education, the new relations now evolving in our own and other lands between the government and science. New universities and promising new movements in the old ones, new school systems and dissatisfaction with the old ones in every civilized land, already mark the present as a period of unparalleled possibility and promise in which we believe our own country is not to be permanently left behind. The advances lately made in the Argentine Republic, Chili and several other South American States, in Australia, New Zealand and some other English colonies, and a few of our own state and city systems and private institutions are remarkable, full of promise, and will be described later.

The one momentous lesson from all these varied fields for us is that the one source of vitality in an educational system is *at the top and not the bottom.* We need not adopt the centralized government control of education, the method I believe of every other country in the world to-day save our own. These systems have their defects and even their dangers. To seek to engraft the best of them bodily or eclectically into our American life, as Japan has done into hers, would be now as impracticable as to enforce the latest and most economic methods of scientific agriculture on the rich prairies of Manitoba. Yet we should not forget that in all its best features there is nothing exclusively German, French, English, or Swedish about it. It is a means to an end, and if properly handled would work as well here as so many of our American business forms and inventions have worked when adopted in foreign countries. But we must develop a national patriotic standpoint, above the rivalry of higher institutions and the partitions which here so isolate educational grades from each other. We must begin the long process of training future educational leaders who shall know, feel and respond to the stimulus of the best throughout the world, who are interested and informed on all stages of education and regard their own institutions as a means to a far larger national if not universal philanthropic end. The exaltation or degradation of the pulpit, bar, and of medical sciences, and now of increasing industrial processes, and even international competitions, great projects and government works, etc., depend upon the efficiency of universities as never before. But nothing depends more immediately or absolutely upon them than colleges and lower schools. Hence it is that while to conserve knowledge is indispensable, and to diffuse it is noble, to increase it is life itself, without which all parts of the educational system grow mechanical, formal and sterile. Jefferson made the cause of the university an holy cause. The orient, the middle ages and our fathers in this country began with higher institutions and built downward. To plan this extension of knowledge to mere juvenile rudiments is the work of a master, and in any other hands elementation and methods are enemies of learning, so sterilizing, so antiseptic to any future contagion of knowledge that it is impossible to overestimate the terrible mental and even moral mutilation they may inflict. If unschooled native talent is not indeed more abundant here, American life is a better school for it than European life, and it finds here larger and quicker careers. Thus if instituted education finds it harder to compete with life, the task of preparing for it is also harder. Yet the apex of our educational system should not longer be in Germany, where scores of our best graduates still go yearly, and to whom so many of our best advances have been due. If education is left to regulate itself, as Tolstoi would have it, it would in the end no doubt result in schools for those who chose, as marvellously adapted to every environment of race, climate, trade, faith, as various and as saturated in each case with local color as those Mr. Leitner describes in the Panjab, so dear to the people that even the English government, after decades of effort, could not supplant them, and the story of which is so full of a strong fascination. Of all schools in history, such seem to best stand for the naive unconscious instincts of the Volk-soul,—conservative only and utterly unprogressive. The impulse we plead for has its exactly opposite source where consciousness and science are at their clearest and best. By free but not enforced or concerted specialization among higher institutions, which will bring to each of them all the wholesome stimulus felt by staid professors when the elective system began; by mored evotion to pure science; by a larger application of the economy of concentration, and above all by more research and love of truth for its own sake, we believe without a shadow of doubt or fear, that new wellsprings are about to be opened in this country, and new and quickening influences to flow downward till the lowest is enriched.

EDITOR.

THE NEW GERMAN SCHOOL.[1]

On the 1st of March, 1889, Deputy von Schenckendorff presented to the Prussian Diet a petition signed by nearly 23,000 educators and others, praying for a reform of the *Gymnasien.* About the same time two *Schulreformvereine* were formed at Berlin. Dr. Lange and General Secretary Peters are at the head of one of them; Prof. Preyer and Dr. Hugo Göring are at the head of the other. Among the reforms advocated by the latter—*Der allgemeine Deutsche Verein für Schulreform*—are better school hygiene, better preparation of teachers, simplification of examinations, a greater sharing on the part of parents in the work of education, the placing of *Realschulen* and *Gymnasien* on the same footing, and the making of the mother-tongue the center of instruction. This Verein has for its organ *Die Neue Deutsche Schule.* The *Tendenz* of the new movement may be seen more fully from the views of Dr. Göring, the editor of this periodical. He objects to the German higher schools of to-day, because they educate the intellect at the cost of the heart, the will, the body. They do not fit for life. They are not German. "The new German school" should be a *Lebens-schule*—a place where pupils prepare for life by living. The Herbart-Ziller-Stoy school, in the opinion of the editor, over-estimate the value of working over ideas as a means of cultivating the moral powers. In opposition to them he maintains the doctrine, "which is proved by the daily facts of life, and was strongly supported by Comenius, Saltzmann, Pestalozzi, and especially by Froebel," that the practical will of the child must be daily exercised.

Dr. Göring's plan is briefly as follows: [The following résumé is in substance that given by Herr Unger in II., 1 Heft of *Die Neue Deutsche Schule.* Dr. Göring approves this in a foot note.]

At first the school is to be a private institution for families of the higher class. It must be situated in a beautiful and healthy region in the country, where there is plenty of room for play-grounds, gardens and fields. There will be three grades of the school; the first is the school of general preparation for practical life, and is for the years from six to fourteen; the second, continuing the instruction from the age of fourteen to sixteen, embraces the preparation for the military schools, for the technical trades, and for business; the third grade, for the years from sixteen to twenty, prepares for the university and the polytechnic, and seeks to give the future students of all the faculties a preparation in language, mathematics and natural sciences.

---

[1] *Stand und Ziele der Schulreform-Bewegung*, Rede in der konstituierenden Versammlung des Allgemeinen Deutschen Vereins für Schulreform, "Die Neue Deutsche Schule," gehalten am 15 April, 1889, in Berlin von W. Preyer. Berlin, 1889.

Die Neue Deutsche Schule. Monatsschrift für Begründung einer dem Zeitbedürfniss entsprechenden Jugendbildung. Hersg. von Dr Hugo Göring. II., 1—8, Hefte. Hamburg, 1890.

Armee-Verordnungs-Blatt. Berlin den 14 Februar, 1890. Nr. 6.

Aufnahme-Bestimmungen und Lehrplan des Königlichen Cadettencorps. Berlin, 1890.

The programme for the school is as follows: The theoretical instruction is given only in the forenoon. It begins with one hour daily, and increases gradually to three, in the second grade to four, and in the third to five hours. So-called home exercises are done away with. Essays, translations and other written tasks are prepared in the class. The teachers do not discipline the pupils, but in case of misdemeanor, the pupil receives a report of censure which he must present to his parents. Promotion to a higher class is determined, not by examination but by the estimate of the pupil's work for a half year. Public examinations are excluded as being thoroughly deceptive. On the other hand, it is desired that parents be frequent guests in the institution. Within the school a regular and accurate report is made by every teacher in regard to each one of his pupils. Over-pressure is prevented by suitable division of mental and physical work. The whole afternoon is devoted to the latter. It is filled with military exercises, gymnastics, sports, gardening, manual training, swimming, skating, and the like. Frequent excursions are made; thus the pupils get practice in surveying, and are introduced to Zoölogy, Botany, Mineralogy, and Geology. In connection with the instruction in Physics, Chemistry, Technology, and Geography, they visit factories, docks, iron-works, commercial houses, railways, storehouses, telegraph offices, post-offices, and the like. In the two upper grades, journeys to large cities and to foreign lands are made, to arouse an interest in language, commerce, geography and history. School-festivals with addresses, declamations, dramatic representations, and musical recitals, are celebrated on the birthday of the emperor and on other anniversaries. Vacations as a rule do not occur. In their place are longer excursions and journeys. Special stress is placed upon the cultivation of the religious sentiments, and of a national German spirit.

In the lowest grade—that devoted to the necessary preparation for practical life—the children are chiefly occupied at first in the garden, on the land, and in the school workshops. Reading, writing, and arithmetic do not begin until the second year. In the whole of the lowest grade instruction in natural science and natural history forms the foundation. To this is added geography, mathematics, and the history of Germany since the Reformation, especially that of the most recent times. But reading, speaking, and writing of the mother tongue form the center of the whole instruction. Only those pupils who are to enter the higher grades receive instruction in English and later in French. On the other hand all take drawing and singing; and those who have musical talent learn to play some instrument. The second grade—for boys from the ages of 14 to 16—embraces the preparation for the military school, the technical trades, etc. This introduces the pupil to the interesting world of commerce, teaches him the branches of trade, book-keeping, and the like, the German, French and English languages, the elements of political economy, law, and the technology of chemistry and physics. The sciences begun in the lowest grade advance with the age of the pupil. The aim of the instruction in natural science is to develop clear ideas of the life of plants and animals, and to present the elements of mineralogy, geology, chemistry, and physics. Those pupils who intend to enter business receive instruction as they need in Spanish, Italian, and stenography. Only after the pupil has in this way worked through and lived through as it were, the conditions of peasant, artisan, and man of business, will the third grade prepare him for the higher callings. Then he receives his first introduction to antiquity; but he receives it not by the study of the ancient languages, but by means of instruction given in German, and by reading important works of antiquity in good German translations. The theologians and philologists alone receive instruction for four years in Greek and for three years in Latin. Modern languages and literature receive special attention. Italian as an elective, takes the place of Latin in the last two years. Mathematics ends with quadratic equations. Special attention is devoted to the most recent German history, especially to the history of art and of literature. Pupils are instructed in science by the works of such writers as Du Bois-Reymond, Henle, Czermack and Preyer. At the conclusion of the whole school-course the pupils are given as clear an insight as possible into the character, aim, advantages, disadvantages, and the economic and social position of the different callings in life.

Dr. Göring does not think that his plan could be immediately adopted in the public schools. A private institution must first furnish new men and prepare the way. If the plan is to be adopted by the state, the necessary preliminary stage is the unadulterated Froebel kindergarten. In a state-institution the work in the different grades would be essentially the same as in the private school. But the pupils would spend three hours in the middle of the day at home. Many of the physical exercises, the agriculture, care of animals, and the like, recommended for the private institution, would have to be omitted in the public schools; but a school-garden would be necessary, and parents who could afford it should supplement the work of the school by preparing a private garden for their children. As a state institution "The New German School," in Dr. Göring's opinion, would form a most important factor in social reform. It would educate pupils to find enjoyment in the humblest kind of work, it would show them life in its many forms, and it would lead them through the natural process of development corresponding to the culture of mankind. By showing the historical development of our present state-life and by raising every kind of labor to its proper dignity it would take away from social democracy its very foundation.

All this would be of less importance if it were merely a theory. Hitherto the *Neue Deutsche Schule* has existed merely on paper; but there is a prospect of the experiment's being tried. A German lady has given 50,000 *Marks* toward the establishment of the school; and it is hoped that some one may soon give land and a building. Among those whom Dr. Göring mentions as having shown their interest in the new movement (some of them probably by decided disapproval) are the Baroness von Marenholtz-Bülow, Prof. Rein of Jena, Scheller and Pickel of Eisenach, Dr. Bach of the Falk-Realgymnasium in Berlin, Dr. Oskar Jäger of Cologne, Preyer, Haeckel, Kuno Fisher, Höffding, Kehrbach, Krafft-Ebing, Paul Güssfeldt, and other distinguished educators. His plan has been published recently in book form. (*Die Neue Deutsche Schule. Ein Weg zur Verwirklichung vaterländischer Erziehung. Leipzic, R. Voigtländer.* 1890.) And the *Cultusminister*, Dr. von Gossler, has permitted the book to be dedicated to him.

The hopes of the reformers centre especially, however, in Emperor William II. Paul Güssfeldt's *brochure* reviewed below is supposed to reflect his views. The Emperor was personally interested in the *Enquête-Kommission* of some forty educators who met on the 4th of Dec., 1890, to consider educational problems. He made a vigorous speech condemning the present system of classical instruction and charging it with over-pressure and serious injury to eyesight; and he insisted that German language, history, and literature, should be made the centre of instruction. What the Emperor will be able to accomplish nobody knows. Different educators take different views of his pedagogical aspirations. Some shrug their shoulders and say that reforms are not accomplished by educational conventions. Others, especially the members of the Verein just mentioned, congratulate themselves upon having the Emperor as an ally. What he actually has done is to change the course of study prescribed for the Royal Cadet-corps. In a special order of the 13th of last February he recommends a change of the course in the following respects:

1. "The end and aim of all education, especially of military education, is the formation of character, resting on the harmonious co-operation of physical, scientific, religio-ethical education and discipline. No side of education should be made prominent at the cost of others. But at present the scientific programme of the Cadet-corps, according to my observations, makes too extensive demands upon a large number of pupils. The course must be simplified by the exclusion of every unessential detail, especially by thoroughly sifting the memory material, so that even the less gifted pupils may be able, with suitable diligence, to follow the instruction without over-pressure, and to complete the entire course in the prescribed time. What the instruction loses in extent by this means it will gain in thoroughness. The teachers in all branches and in all grades will immediately have to adjust their methods in this respect.

2. "In every simplification, however, the instruction must be made still more practical, so that the cadets not only may gain the knowledge and skill immediately necessary for the military calling, but also may obtain a mental equipment which shall render them capable themselves to exert in the future a moral and instructive influence in the army, the great school of the nation, or in case they should later enter another than the military calling to fill their place there also.

"In religious instruction the ethical side must be made prominent, and chief stress laid upon educating the pupils in the joy of faith and the fear of God, to strictness toward themselves, to patience toward others, and upon establishing them in the conviction that the practice of fidelity and devotion to ruler and fatherland, as well as the fulfillment of all duties, rests upon divine commands.

"The instruction in history, more than hitherto, must give a knowledge of the present, and especially the position of our fatherland in it. Accordingly, German history must be more strongly emphasized, especially that of modern and most recent times; but ancient and mediæval history must be taught, chiefly in such a manner that the pupils shall be impressed by examples of heroism and historical greatness, even from those epochs, and also obtain an idea of the roots and development of our culture.

"Geography, political as well as physical, while beginning in the lowest grades with the home must first of all supplement and support the historical instruction in the different grades. The further end of geographical instruction is to bind the pupil most intimately with his fatherland, but also to teach him to understand and value foreign lands.

"German becomes the centre of the entire instruction. In every subject the pupil must be instructed in the free use of his mother tongue. Even in the hours devoted to German, as well as in the instruction in literature, in the choice of the pieces for reading, in lectures and essays, special consideration must be given not only to classical antiquity, its legends and culture, but also to German legends and the literature of the fatherland; and the pupil should also be made acquainted with the mental life of other important civilized nations of the present, by an introduction to separate master-pieces of their literature.

"In the instruction in modern foreign languages, the stimulation and instruction of the cadets in the practical use of the languages, should be kept in view from the first grades."

The programme of the Cadet corps, as revised according to this order, lays special stress upon modern languages and modern history. Of the twenty hours devoted to history during the *Gymnasium* course, sixteen are devoted to modern history since 1415 (Geography is taught with the history in Prima and Ober-Prima), and only two hours to ancient and two to mediæval history. Of the 136 hours devoted to languages, 50 are for Latin, 21 for English, 37 for French and 28 for German. Much instructions in the mother tongue is given also, of course, in the other branches. 15 hours are devoted to Geography, and the remaining 117 hours are divided among the following subjects—Religion, Mathematics, Natural History, Physics, Chemistry, Drawing and Writing.

This order is deemed especially important because in it the Emperor has shown his hand. It contains his freely expressed opinion. The reformers see in it the beginning of the end; and maintain that while the change is intended first for the *Cadetenanstalten*, the Emperor's purpose is to extend it to the other schools. By a simple order the Emperor can change the programme of the Cadet-corps; but time and indirect methods are demanded to effect any great change in the public schools. Dr. Göring appeals to the Emperor as "the born protector of the 'New German School.' "*Der Hohenzoller wird den Muth und die Kraft haben, das durchzusetzen was noth thut: eine neue deutsche Schule!*"

WILLIAM H. BURNHAM.

RECENT LITERATURE OF HIGHER EDUCATION.

I.—FRANCE.

Universités et Facultés. LOUIS LIARD. Paris, 1890. pp. 262.

Higher education in France was in a very bad way before the war of 1870. Not science but professional training was the end of all. There was no place for research; faculties were isolated even from each other in the same town. There was no co-operation, and no exchange of views. They met once a year in long robes and were jealous of precedent. The triumph of individualism was complete. The Empire used universities to make public sentiment for its ends; but the contrast of this with other branches of public service was painful. Changes were made with no new orientations. At Lyon the faculty of letters was housed in an old palace; at Bordeaux, in a part of the City Hall; at Toulouse, in an old convent. Only the faculties of law and medicine had real students; while those of letters, and worse yet of science, wasted labor, diplomacy and talent to develop a transient, unknown and fair weather audience of hearers for everything under heaven, who sometimes left to follow a band on the street. Knowledge was broken into small coin; its schools were bundles of doctrines. Everywhere the university spirit was decayed, and the duty and religion of high studies was extinguished.

Before 1870, however, the *Ecole Pratique*, which has wrought a revolution, had been organized in five sections. It gave real pupils, investigators, fellowships, apprentices, expeditions, freedom from the procrustean programs, scientific publications, and union and association. After the war, which checked this young growth, Renan declared that it was not the German schoolmaster but the German universities that had conquered France; for while the school makes the soldiers, the university makes the school. As a result of the law of 1875, ninety-nine millions of francs were pledged, of which the cities gave fifty-one millions, the state forty-seven, and the departments the rest. Perhaps the desire to unite the hitherto isolated faculties, each with its own independent history, traditions and tendencies, led to the policy of bringing them under one roof, as in the magnificent new Sorbonne, instead of the German way,—many pavilions and a small university city of buildings. To retrieve the degradation of having to earn its own expenses in 1838 the faculties received five million francs from the government in 1877, and over eleven million in 1889 (primary schools costing 100 and secondary cost 18 million francs). In 1889, the ten Prussian universities nearly twelve million francs. Outside Paris, but five of the fourteen provincial universities have all four faculties. Twenty new departments have been added in Paris. These are as follows: Administration, constitution, pandects, finance, children's diseases, clinical ophthalmology, syphilis and skin, nervous, mental disease, organic chemistry, physiological chemistry, literature and language of North Europe, history of philosophy, history of the middle ages, contemporary history, archeology, French language and literature, sanscrit and comparative grammar, the middle ages, science of education. Germany now has 12,000 students, or one to about 500 of its population. France has one to 2000 inhabitants.

Inside the university all is changed. Instead of abolishing degrees and placing the state examinations in their place, the "canalization of science" by programs was set aside, and the policy of developing savants as well as practical lawyers and doctors was adopted. Instead of effacing differences the policy was to inspire all with one common thought and thus to unite the faculties at the top of their endeavors. They could not suppress public courses at once, so deeply French were they felt to be, but the private esoteric courses, so ridiculed and denounced as cloistral at once became very popular, and all the younger instructors rushed into them. Two hundred and twenty-eight conferences have been established. Teachers prepare for the license and the new aggregations, or competitive examinations for professorship in the Lycee. Of 3700 of these students of pure science and letters, 620 receive stipends from the State, which before aided chiefly the Lycees. This is the highest ideal of every civilized nation, and in France it is the exact opposite of University extension. It is University contraction. Before, all who went beyond the Lycee went to the special schools, save the few who were ambitious of professorship who went to the École Normal. Now the École Pratique does this work also. Graduation is not the end, and the lost quality of long and patient work is restored. Formerly the provincial faculties had to send their programs to Paris in advance, where they were revised and returned marked *ne varietur*. But the traditions of concentration of all at Paris have been reversed. Faculties have acquired liberty and with it responsibility. They have their own credit, and administer all the funds they do not spend, and can accept legacies and gifts, so that local rivalries have sprung up. Besides the titular professors for life, are the chargés de course and the maîtres de conférence. The two latter take part in the faculty assembly, which considers science and education, but not in the faculty council, which is administrative. The old university, the indivisible image of the State, legally ceased to exist in 1850, but still lives in popular love and tradition. In 1883, all faculties were asked if the faculties could be constituted into universities as in other countries. Although most replied yes, it is felt that time and not legislation must gradually knit the faculties together. The new local senate combines them to unfold common interests. Where the spirit of science is strong this fusion wrought by the just recipriocity of service and sacrifice grows rapidly, and where it is weak this progress university-ward is slow. The union of master with master, and of students with each other, throughout France, as well as the closer union of student and master in the common work of research is the watchword. Student fraternities unknown before reinforce this hope, for they are now-based, not on province, religion, politics, class, but on science and patriotism, and are open to all.

The future will grow from this common consciousness. Science is one and gives unity, and on its natural classification the university must spring by epigenesis. What happens in one field must not be lost upon others. Thus, only science can heal our wounds. In a republic where so many thousands of our future leaders are now students, the university, which is the form higher education always takes, should now be our central patriotic ideal, utopia, and in it democracy must seek a new principle of life. The locality, where provincialism is so weak as in France, must be developed to be a local placenta, each for its own institution. France still lacks the philosophical faculty, the heart of the German University. Its lycee students are not preparing for the University as are those in the German gymnasium, but for the professional school. The competition of pure science with these is terrible, but the former is steadily gaining. Every instructor in the Lycée should study at the University as in Germany. Surperfluous institutions cannot be transferred to other places, as Berthelot advocated. They cannot be massed into groups as Waddington suggested, but they may be organized on different plans with different degrees of completeness in the number of courses.

L'Université Idéale. E. L. HALLBERG. Rev. Internat. de l'Enseignement. July, 1890.

In view of M. Liard's book the maximum of reforms that should be recommended to legislatures are as follows: The rector of the provincial university should be at the same time the head of the primary and secondary schools. He should be the constitutional director of all their methods subject only to councils; one general university council to replace the present academic councils, and charged with finances, appointments, and under this three special councils, one for each grade of education. At present secondary education has no council. The entire fund for the year should be turned over by the state for the rector and councils to apportion at discretion among the three members of the required university, viz., the primary school, the Lycees, and special schools or the academy. The rector should be appointed by the chief of the state, on nomination of the minister of education, and his salary at the end of the five years of service, before renewal is necessary, should be 25,000 francs. Above the rector should stand only the president of the general council, and next below him should come three vice-rectors, who should act as inspectors, one or more for each grade. Each faculty should have a dean annually chosen by lot. The most shocking reform, from a French standpoint, is the total separation, in distinct buildings if possible, but at least each under its own director and independent of the other, of the internat or the boarding and rooming part of the Lycees and special secondary schools, from the educational part. Highest in the former should reside students advanced enough to act as maîtres d'études, and next above them, but lowest in the latter, should be the repetiteurs, who should supplement and conduct reviews for the professor. In common school or primary grades, teachers should be prepared by the inspectors, appointed by the rector, but with the approval of the prefect. The budget must be made up by joint action of all the councils, but independent endowment of the universities is the desideratum.

The juncture between the three orders of education must be as close and complete as between successive classes in each. About the worst evil in education is the indifference and ignorance, real or affected, on the part of both teachers and students in each order of education of orders below their own:—of the college of the high school, and of the high school of the grammar school, etc. These must penetrate each other and be an unity.

Le Conseil Supérieur de l'Instruction Publique.

The decree of March 1808, which organized the University of France, placed it under a grand master and a university council of thirty members, organized into five sections. The university, a term synonymous in France with the entire system of public education, was nominally autonomous and independent. The universities of the middle ages were republics of scholars within monarchies; but this was a machine to fashion youth to the will of Napoleon. In 1815, in 1824, when the ministry of public instruction was appointed and in 1845, the constitution, name, number or function of this council was changed. The declaration of the rights of man in 1789 did not include the right to teach or be taught, and the liberty of instruction was much discussed between 1847 and 1852. At one time the chief function of the council seemed to be to prepare work for the ministers. At one time it must be consulted, not only concerning all text and other books for use in all schools, but concerning all new chairs, faculties, buildings, etc., and might be consulted concerning all the laws and decrees the government was preparing, and the government might ask its advice without following it. To some it seemed to consolidate and aggrandize the university, and to others to make it a hierarchy; and by one decree it was made chiefly consultative, formal and subservient to the minister, and by another an active instrument of reform. In 1873 still another council was constituted which the framer of the law conceived to be an assembly of the entire French family, the peculiar organ of the moral life of the nation, representing its great social interests.

The significant law of February, 1880, created the present council which consists of 62 members, nine of whom are permanent and appointed by the President of the republic, and the rest serve for four years and are elected from the College of France, the museum, catholic and protestant faculties, faculties of law, medicine, science and letters, the school of charts, of living oriental languages, the polytechnic school, the beaux-arts, the arts et métiers, the école centrale, the agrommic institute, the lycées, provincial colleges, primary and private education. The functions of this body include the consideration of all new creations whether of faculties, institutions or chairs, all text and reference books offered for introduction to school uses, programmes, methods, examinations, discipline, the adjudication of all questions that come up to it from lower educational bodies. The council meets twice a year, but the ministers of education can convene extra sessions. Regular meetings are held in July and December and usually last a week. One half constitutes a quorum. The meetings are private but their decisions are printed in the Journal Général and in the Bulletin Administratif. Special committees are appointed for special purposes by the minister who presides. Members wishing to serve on a committee announce their wish, and, as a rule, any member may take part in the deliberation of any committee.

Committees of outside experts may be constituted for special purposes.

Under the Republic the state is *we*, and what was once the education of a prince is now the education of our masters, the people. Great men have worked in the council successively for twenty years, and also side by side impersonally for one purpose and on one plan. There was no "electoral fever" either in 1884 or 1888 in selecting new members of the council but only a salutary agitation. There have been no abrupt changes or reactions, and even the judicial functions in matters of discipline and contention have worked smoothly. Its history is the complete history of education in France for the past ten years, and it has been a point of living unity between the faculties and grades. The amount of work accomplished is surprising. In superior education it has created the conseil général which unites the faculties of the same city, adopted a policy of gradually developing real universities, revised and often transformed all degrees and examinations, provided for legacies and donations, etc. In secondary education the chief work of the council has been the renovation of the plan of studies, and particularly that of the secondary special schools of M. Duray. In primary education everything has been reconstructed part by part.

II.—GERMANY.

Manuale Professorum Göttingensium, Zweite Ausgabe. GÖTTINGEN, 1887. pp. 128.

This is an official collection of the statutes of the university since its charter in 1736 which are now in force, and is printed only for the private use of the full professors of that institution. It gives an inside view of the organization of the university which is full of interest, and is the only instance of its kind known to the writer, such statutes being usually published separately and a collection covering all departments of the university being hard to complete. It begins with a charter or diploma of privileges in twenty-seven articles. First, all professors have "full and unlimited freedom forever" to lecture publicly and privately, hold disputations, to express judgments and objections to the faculty, to bestow and invest with the four degrees of doctor, licentiate, master, baccalaureate. They are especially accorded independent jurisdiction omnimode. Save in very special cases the prorector is exempt from legal prosecution during office. The ordinary professors of all faculties constitute the senate which shall have charge of the general welfare of the university, execute statutes, rights, privileges and immunities, as well as needed reforms. The university may administer a wine and beer cellar with university funds. On the death of a professor his widow or heir receives one-fourth of his regular salary as "deservitum" and another *gnaden*-fourth, like other civil servants. The rank of professors is equal to that of a royal counsellor, and on public occasions they shall have precedence of the local mayor or burgermeister and other city or town officers. No professor of one faculty shall lecture in the field of another, save that any one in the three other faculties may lecture in the field of the philosophical faculty, and jurists may teach in the field of church history.

Then follow the regulations for celebrating the emperor's birthday the exercises of which must consist of an oration by a member of the academic senate, and music, the expenses to be borne by the university. The regulations for electing a member to the Prussian house of lords (Herrenhaus), in which each Prussian university must be represented by a professor, follow. A member of the theological and another of the law faculty must be chosen to attend the synod of the state church which meets at least once in six years. The pro-rector is ex-officio a member of the provincial assembly.

Some of the fees are as follows: first matriculation, $4.50, if from another university $3.00, of which one-fourth goes to the pro-rector, and the rest is divided between the philosophical faculty, the general treasury, the poor-box, the library and the professorial orphan house. Small but stated fees are charged for pass-cards, testimonials of conduct and ability, books with professor's certificate of attendance, etc. The fees for promotion, habilitation, and nostrification, generally nearly $100, are distributed into nine parts, the largest of which, nearly three-fourths, is divided equally among the the members of the faculty giving the degree. Copies of testimonials, leave of absence, fees per diem for imprisonment, taxes in case of death of a member of the university, a fee for heating the hall where promotions are held, are all presented and all together help to account for the elaborate and expensive system of bookkeeping in use in German universities.

The university library is an independent institution, the librarian being appointed by the crown, the custodians by the cultus minister, and the assistants by the curator. Graduate students may be received as library apprentices, and students may obtain special library privileges by becoming amanuenses to the librarian. There must be two catalogues; 1, a "real" catalogue, where the number of the catalogue page is also the shelf number; 2, alphabet catalogue; manuscripts, music, school programs, dissertations have separate catalogues. The "manual" contains current titles of acquisitions for the year with prices, etc. Great pains is taken with exchanges, and exchange lists and accounts are kept with great care mostly during the summer. Gifts of above $750 cannot be received by the library till the minister is satisfied that the requisition conforms to the needs and order of the library. Each instructor writes in a book the name of any book he desires, and the librarian writes after it whether it is ordered or if not why not. The binder can retain books but three weeks, as an inventory of all furniture, etc., and a minute report of one fifteenth of the books in the library is made each year. The library is not open after 3 p. m. For the use of the library minute directions are given. Students require special permission in order to visit the periodical room. Here current numbers are exposed two weeks and can never be taken out. The salient features of these many pages of detailed regulations are that the student is more restricted and the professor more privileged in the use of the library than is common with us. Works of mere entertainment are not loaned to students, but any inhabitant of the town properly vouched for may have free use of the library. The library is under control of a commission composed of the officers of the library and of one professor of law, one of theology, one of medicine, two from the philosophical faculty, one to represent philology and history, and one to represent science and mathematics, each elected for five years. The function of the board is to "influence the organization and growth of the library" and to "establish close and lasting relations between the body of instructors and the library." The librarian's annual report to the curator passes through their hands.

Rules for the use of the botanical gardens, and the university bathing establishment follow. The election of the prorector, who in Göttingen is rector, involves a general and later a special vote to select one from the several candidates receiving most votes. These statutes are very minute and provide for all possible contingencies. How the first list of candidates shall be made out, the valid grounds on which the office may be declined, the way in which the journal shall be kept, doubtful cases where lot is to be invoked, the ultimate disposition of old ballots, (by burning) are all provided for. The long oath and duties of the pro-rector follow. Since 1887, he must present an annual chronicle to the ministry, as has long been the custom in Kiel and Halle. Since 1848, much of the business of the senate has been done by two committees each consisting of the rector, his predecessor (who has many functions) the two university counsellors and five professors elected every six months and representing the different faculties. The first of these is an ethical board or committee, (Rechtspflege-Auschuss) and has charge of matters of discipline, the university prison, removals, and the state of morals generally with a report to its prorector each semester. The other body is administrative (Verwaltungs-Ausschuss) and cares for the funds of the university, and all expenditures not current and controlled by the rector, and not derived from the state and under the care of the curator. They look after the obligations of the extraordinary professors, questors and subordinate officers. They give admonitions, try to obviate misunderstandings by their intermediation and promote the greatest collegiality and dignity in the faculty. The remisson of fees, the state of the buildings, exceptional meetings of students and filling of vacancies also fall to their charge.

Several pages of parliamentary rules for the weekly meetings of the senate are given. Notification of meetings must be a missive containing the topics for discussion and their order, the receipt of which each member must acknowledge in writing. If he must be absent he must excuse himself, and only if he does so and is so entered in the minutes can he be informed of what is done in the meeting. Absent members are bound by the action of those present. Members arriving late cannot be informed of the previous action of the meeting. Speakers must never exceed five minutes and must always address the chair. The journal contains only the questions voted on etc.

Professors must do their utmost to promote the interest of the university. With all their power they must strive to promote peace, harmony, and concord, must avoid all detraction in public or private, must be jealous of the honor of the university, their own faculty and of themselves, etc. Their oath of office pledges them to this, and to fealty to the king and constitution, This oath must be construed to cover all duties, so that in acting e. g., as secretary of any university body no special oath is required. By a curatorial rescript of March 1878, theological professors are pledged to lecture "clearly and fundamentally" in accordance with the doctrines of the Lutheran church. Lecture announcements must be handed in at a fixed time or a summary visit from the beadle follows. Term of absence may be for three days only in urgent cases, but must be announced. For absence of from three days to four weeks professors must obtain leave of the curator, and if for longer of the cultus-minister. If absence is for more than six weeks in term time, royal permission must be obtained. For six weeks absence pay is not stinted; to four and one-half months the salary is reduced to half and for longer absence ceases altogether unless in case of sickness.

The laws of student dicipline, although revised in 1879 are better known because accessible to all students. and need not be described here. The functions of the syndicus or judge are carefully defined. He can compel attendance and testimony by a punishment of 24 hours imprisonment. The severest of the seven penalties is exclusion from all university study, involving of course exclusion from all careers to which such study opens the way. Then come laws for student societies and meetings, for practice and instruction in fencing and the use of the rooms provided for this purpose, for the university hospital, for prizes given by the crown, and then the series of special statutes for special funds given by various persons for the aid of students, for stipends and free tables and rooms. These funds are numerous but comparatively few have attained the dignity of having a separate series of statutes. The questor's or treasurer's rules occupy 12 pages, then follows the widow and orphan fund which is administered by a special board, and is supported by the profits of the university drug store, by an annual members' fee of 12 dollars and membership of which is no longer compulsory. The volume closes with a definition of the duties of the curator and the beadle.

University statutes in Germany are usually not edited or bound together, and many of them, especially those regulating the professors and rectors and are difficult to obtain. It would probably be impossible to get within two covers and in this space so good a picture of the constitution and working of a typical Prussian university as is here presented. Dr. Althoff the chief expert of the Cultus university lately advised an American student of German universities to take this manual and spend a month at Göttingen, studying it thoroughly and he would get the best insight possible in a limited time, into the Prussian system of higher education.

Die Mängel deutscher Universität-Einrichtungen und ihre Besserung. PROFESSOR C. HALLE. University of Breslau, 1887. pp. 34.

No one should lightly touch the Universities, which are the jewels of the German nations. Neither theology nor the State nor politics must ever be suffered to restrict in the least degree the freedom of teaching which is the heart of the Universities themselves. The right of appointing and promoting instructors should be as impartial as is the nomination of judges. This indicates one present danger. Another is that docents are tempted to specialize, too narrowly, and too early.

Again, if professors may be pensioned at the age of sixty-five they should still be allowed to lecture and receive all the lecture fees. There is far too much irregularity and laxity about beginning and ending the University term-work, and a deplorable tendency to cut the year short at both ends is growing. Term time should be prolonged instead of shortened. Again, the value of the doctor's degree is in danger of being lowered by several causes, prominent among which is failure to insist that every thesis be printed that it may be accessible to public criticism. It should also be printed as vouched for by one proper responsible professor. Medical doctors should not be permitted to hold the title till they have passed the State examination. The doctor's degree is practically, if we except the theological licentiateship, the only degree conferred by the University. The number of Americans easily let through, has, the author thinks, somewhat paled its nimbus. Examinations are no longer held over a repast paid for by the student, or in a professor's private room, or conducted by one or two deputies, or based on half an hour's informal conversation. Either a thesis is extraordinarily good, in which case the degree may be given *honoris causa*, or else there must be an actual and searching examination. Finally docents should pay far more attention to teaching, and should enter upon docentships not much less than thirty years of age.

Akademie oder Universität, by PROFESSOR LOTHAR MEYER. 1874. pp. 34.

This old paper was very influential in the history of the important question of which it treats. It is here urged that special schools such as those for foresters, landed proprietors, &c., should be located near and brought into the closest relations with Universities. Forestry schools should not be in the woods, nor agricultural colleges isolated in the centre of wide cultivated fields; nor mechanical institutes near factories; but these and all other technical institutions should be near universities, and find their scentific bases in its work. These depend upon the progress of all sciences, and if isolated, are prone to develop feeble scientific courses and to become bureaucratic administrative machines. Every pupil in these academies should have a glimpse of that highest and freest of all culture work—independent investigation. Let all professional schools whatever for men of university age, be not only near but incorporated in the government of some university.

III.—OTHER EUROPEAN COUNTRIES.

La Réforme de l'Enseignement Supérieur aux Pays Bas. M. VERNES, Paris, 1879. pp. 54.

The higher educational institutions of Holland were profoundly reconstructed in 1876, and this pamphlet is a concise exposition of their present organization. Before this there had been no essential change since 1815. The universities and the "atheneums," which were not gymnasia of which the university was the normal prolongation, constituted middle and higher education. The atheneum was a municipal or communal institution; that of Amsterdam was founded in 1632; that of Deventer in 1636. They were universities without the right to examine and confer degrees, and adapted to those who could not give long time to professional study. There were in all, six. That of Amsterdam was made a university in 1876, so that this little country now has four in all. Under the law of 1815, there were five faculties, and denominational theological faculties received state subventions. Leyden could have but 21 professors, and Utrecht and Gröningen 18 each. The professors are state officers, and retire on three-fifths pay at the age of 70. The certificate of a Latin school or gymnasium is no longer required for admission to the courses of the university, but only for admission to its examinations. The degrees are candidate (correponding to the French licentiate,) and doctor. Each is governed by a board of five curators which exercises functions not unlike that of the French conseil de perfectionnement. They are men of the highest social positions, named by the government, serving gratuitously. They propose to the minister new chairs, and two names for every vacant professional chair.

It was proposed to reduce the number of universities to one. Leyden and Utrecht are very near together and some urged the suppression of Utrecht, others that of Gröningen. The friends of each defended it so well, however, that not only were both sustained but a new one established. This can only tend in so small a country to lower the level of education by unduly enhancing professional, as compared with scientific studies, or to make them organs of the vulgarization of literature and general scientific ideas. The evil may be mitigated by grading Leyden as first and highest, and by specializing as is now beginning to be done by law. Meteorology, *e. g.*, is given to Utrecht, and Semitic languages to Leyden, etc. Instead of being pepinières for reformed pastors as under the law of 1815, the new law (church and state were separated in 1848) gives equal protection to all, and establishes a seminary of the church of the majority. Instead of suppressing the theological faculty, as was proposed, religious instruction has been given a lay or scientific character. The philology of the old and new testament language, sacred history, philosophy and psychology, comparative religion and the philosophy of religions, taught by such men as Scholten, Kuenen, and Thiele represent the faculty of religion. Here professors are chosen for their scientific merits and without reference to confessional considerations. Beside these, church professors, representing Catholics, Jews and Protestant denominations, may teach side by side in their own seminaries the various religious differentia. These latter are left to the churches which while thus outside the university can profit by all its advantages. The Catholics and Protestants made common cause but in vain against this introduction of profane science into the university. A proposition, that all university degrees should be not only based on work, but purely honorary and entitling no one to exercise any profession, was lost, but the rights conferred by the 17 special doctorates were defined and the examinations leading to each determined.

The administration of the universities is, in a general way, left to the minister of the interior, as till lately was the case in Belgium. An annual report on the state of the universities is furnished each year to the States General and some of the most remarkable debates here have been on educational policy and methods. The curators have lately instituted the docent system, and have apportioned students fees to various accounts instead of giving them to the professors whose lectures were heard. The secretary of the board of curators is named by the king for five years and salaried. This board must watch and enforce the law, correct irregularities on the part of professors or even suspend students for six weeks. They can permit instructors to give other courses than they are appointed to give. Only the king can permit a professor to exercise any public or outside calling. Under the curators is the senate, whose rector is named for one year, by the king, from a list of three sent up by the senate. The rector is assisted by four "assessors," named by the senate from its members, and calls meetings of the senate when he deems needful. Each faculty has its own meetings and elects a dean for four years. The annual expenses of the university of Leyden are over $200,000, of Utrecht and Gröningen about half that sum each. The salary of full professors begins with nearly $2000, and after 10 years service may amount to nearly $3000. State money was accorded to religious professional schools in existence on the passage of the law in 1876, and the reformed church has an elaborate school of dogmatic theology, history of the reformed Dutch church, ecclesiastical law, catechism, homiletics, etc., the accounts of which are appended to those of the university proper, and which receives state subventions.

Dutch students, now numbering nearly 2000 in all universities, are largely from good families, have no *corps* but student societies owning their own club-houses, to which professors are often invited. They enjoy complete freedom and discipline is rare. The government provides six scholarships of about $400 each to each university. The one large club in each university is a tribunal of honor, with its own laws and government. Nearly all students are members. If the professors are exempt from inspection from above they are not from below. The journal and annual almanac published by the club expresses student griefs and criticisms freely but with a courtesy peculiar to the students of Holland. There is no social position more respected in Holland than that of professors.

Tomsk University.

On Aug. 3, 1888, the new Siberian University of Tomsk was opened with impressive ceremonies. As early as 1803 the project was broached. Little was done till 1877, when a commission was appointed to select a town. Tobolsk had chief historic significance, Omsk was the military centre and the seat of the governor general, and locations here would mean military discipline. Tomsk was chosen, a building committee appointed to determine plans, and in 1880 another to carry them out. The central building is 226 metres long, in a beautiful birch-grown park, and cost nearly four hundred thousand dollars, and contains the aula, library, church, lecture-rooms, residences of the rector and inspector. Besides this, a building for anatomy, one for clinics, a building for the manufacture of gas, a water building, and a chemical laboratory are under way. Private funds have supplied more than one-fourth of the expense, and have entirely built a hall where 100 students can live at a total cost of seven dollars per month. Only a medical faculty has been established. When complete this will consist of twenty-five instructors. Three other faculties will be added, an historico-philological, a physico-mathematical, and a legal. During the first year there were seventy students, and forty stipends have been established. Although the library contains 70,000 volumes, most of them are gifts, and very few are scientific, so that there is great dearth of needed literature. Private donations have flowed in from all parts of Russia, from friends of exiles, and the new university has created great national enthusiasm. In August, ice blocked the mouth of the river and the town was submerged, and much of the rest burned. An high public functionary embezzled 57,000 rubles, and the press was owned by criminals, and so disreputable that all the professors pledged themselves to print nothing in it. The condition of life was so hard that full professors received 4500 rubles, a salary larger than at any other Russian University, and the severe new University code of 1884 is relaxed in several particulars.

Zukunft des hoeheren Unterrichtswesens in Japan. DAS OSTASIATISCHE LLOYD, Schanghai, July 4, 1890.

Entwurf eines Lehrplans fur das Japanische Lyceum in Yamgutsi, by DR. EMIL HAUSKNECHT, July, 1889.

Education in general, consists in transmitting the totality of mental and moral culture from one generation to the next. In Japan this continuity has been sharply broken. A foreign culture has been suddenly introduced, and that in the face of the old traditions of exclusiveness. Older people there less readily break with old ideas and assimilate new European science, customs and dress more slowly. The young have learned these so rapidly that decent respect for parents and for age is often lost. So strong is the peculiar corps-spirit in Japan that one graceless pupil often leads his mates to school strikes of divers forms against native teachers, who often have no idea how to treat pedagogic material. Dr. Hausknecht, who now returns to Germany, after serving three years as professor of pedagogy in the university of Tokio, proposes to meet these evils by establishing a lyceum, taught by teachers, all of whom must have taken a three years course in an university, including one year and a half of pedagogy. The latter he has made very detailed in all the daily routine of a teacher's calling, and has based all on the system of Herbert's new school followers, Willmann, Frick and Schiller, by means of which he hopes to destroy the worship of Herbert Spencer's shallow educational platitudes and the less objectionable Bain who are now greatly in vogue in Japan. Dr. Hausknecht's plan is expensive, but has already been completely adopted by one class in an institution at Yamgusi. Four other schools have partially adopted it.

The curriculum carries through eight years the history and literature of China and Japan, along with preponderating western subjects, and at last widens to oriental history. The course is one with no bifurcation till the last year.

Drawing, beginning with netz and stigmographic systems, is carried through nine years. The lives of the founders of great religions fall in next the last year, but the Japanese can never understand why religion seems so important to occidentals. Heretofore there had been almost no course of study, and autodidactism had wrought growing confusion. Whatever we may think of this very interesting plan of study, or of the author's thorough-going Herbartianism, all must admit that almost any system is better than chaos.

IV.—AMERICA.

History and Management of Land Grants for Education in the Northwest Territory, by GEO. W. KNIGHT, PH D. Putnam, N. Y. 1885. pp. 173.

After congress had received from the various States the relinquishment of their claims upon the Northwest Territory, it desired to cash these lands as soon as possible for the extinguishment of the National debt. The plan of dividing them into townships of six miles square, and reserving one of the thirty-six mile square sections for schools originated, not with Jefferson, nor in the educational zeal of statesmen of that day, but in the desire to make the lands more tempting to settlers. The third of the six irrevocable articles of compact in the great ordinance of 1787, declared that "schools and the means of education shall forever be encouraged." Reluctantly two townships near the centre of the State were given by congress for a "literary institution." By subsequent laws, each of the five States under this ordinance—Ohio, Indiana, Illinois, Michigan, Wisconsin—has received from the public domain an amount of land equal to one thirty-sixth of its area for schools. As lot No. 16 was sometimes good and sometimes bad land, the proceeds of its sale in states admitted since 1836 have been consolidated into one fund and distributed pro rata. In 1850, all unsold wet and swamp lands were granted to the State in which they lie, and the States themselves in many cases set apart a portion of the profit from these lands for education. The last donation by Congress for educational purposes was brought before Congress in 1857, and passed in 1865, giving to each State 20,000 acres of land or its value in scrip for each senator and representative in Congress, for the study of such branches as are related to agriculture and mechanic arts. The southern congressmen opposed this invasion of the province of the State, but have since availed themselves of its provisions.

Dr. Knight traces the history of these lands in each of the five States with much detail and tabulates at the close the school, agricultural, swamp, saline and university land grants respectively in five instructive tables. The story is a sad one. Most of the States hastened to lease or even sell the lands more cheaply than the United States placed public lands on the market, often at lower and lower rates each successive year, so much more eager were the legislatures to attract settlers than to provide for education. The passion for rapid growth was aided by the plea of immediate educational needs, yet often the income thus derived was not used for educational purposes for many years. Over-legislation, sometimes amounting to almost annual change and reconstruction of policy and resulting chaos, much worse under a system of leases than sale in fee, favored the latter course. Local and special enactments of the loosest kind, aided by a lobby perhaps nowhere worse than in Ohio, the complications of bookkeeping, forced sales, often at from five to twenty per cent. of what might have been realized even after State superintendents of education were appointed (who lost their position if they spoke too plainly); such is the sad story, repeated in different states. In Indiana the school lands were placed largely under local control, and some were well managed and others entirely lost. Under the State system of Ohio, the fund arising from the sale of lands is gone and the people tax themselves to pay interest on it. In Indiana this fund is intact, and can be borrowed of the county treasurers, on good mortgages, at any time in small sums. The latter has so far yielded higher interest, but the expense of the system is greater. In Wisconsin the period from 1858 to 1862 is shown to be one of fearful waste and loss. In the administration of the University land Ohio has perhaps the worst record. Forty thousand acres of excellent land rent for about four thousand dollars, on a valuation made seventy-five years ago. This rental is about one fifteenth of its valuation for taxation. In Indiana this land has been sold for two dollars and thirty cents per acre, and is "inferior to none in the State." Illinois, however, is said to have the "worst abused educational trust in the Northwest," selling University land and using the proceeds for more than a quarter of a century before starting an University. Wisconsin has made grants to "compensate" for her deficiencies.

Wisely managed these lands would have been sufficient for the needs of the people. As it is they are both an aid and a stimulus. It is pleasing to remember that many states admitted since have profited by the errors of these. Despite the noble example of Michigan, the apathy of voters to higher education is apparent. But for this cause the frequent embezzlements and flagrant diversions of funds here described could not have occurred. The confidence in the ability of legislative assemblies to vie with private corporations in conducting higher institutions of learning in this country is not strengthened by reading this sad record.

The general lesson is that wherever the lands or funds have been entrusted to responsible local management of township, county boards of trustees, or superintendents, they have been well cared for, while to the State legislatures are to be ascribed the errors and losses. In Ohio and Michigan the entire support for schools in those states is raised by taxation and the school funds are purely ideal, constituting merely a moral and legal obligation on the people to lay an annual tax forever to pay interest on funds spent by their ancestors. Dr. Knight has found in all these states but one petition asking for an increase in the price of the land or suggesting anything for the benefit of the fund.

The History of Federal and State Aid to Higher Education in the United States, by FRANK W. BLACKMAR, PH. D. 1890. pp. 343.

This is a circular of the Bureau of Education. The author attempts to present in concise form the plans of thirty-eight States in dealing with higher education, particularly in the South and West, where State education has its strongest hold, as well as the history of congressional aid. To our fathers, "common" or "free" schools meant colleges as well as institutions of lower grade, and they often desired the higher even more than and before the lower. That this work may be the first step toward an instructive and fruitful comparison of the several States, as well as to reprove the local conceit and complacency so common now in education, is greatly to be hoped.

In colonial times church and state co-operated in education to develop the individual, and not till the states united into one great republic did education begin to seem a necessary public defence against the danger of uneducated masses. The Dutch and Swedish colonists gave education into the hands of the church, which was the primitive schoolhouse, and the pastor often the schoolmaster. Educational laws made for the colonists in England were from motives of benevolence, and the propagation of the gospel, and colonists and Indians were often viewed in the same light of charity. After the political awakening of the declaration of independence national consciousness and a sense of the sovereignty of States caused attention to turn to the needs of universities and schools for new reasons. Charters with privileges, exemption of professors and students from military duty, land and money endowments, lotteries and special gifts were the chief methods of aid. Twenty-four states have now established universities by statute laws, and two provide in their constitution for the establishment of a state university. In every state except California unproductive university property is free from taxation, and one state once exempted all the property of professors. In general the privileges of non-state institutions are growing less in states which have flourishing state universities; sometimes as church and state separated, the former aided the classical school, as the latter favored scientific and industrial establishments, and its interest in political education has distinctly declined. Education is not money-making business. It is charity or for public safety, and no advanced institution of any value can pay its way by tuition. It never declares dividends. To tax them is to tax light itself and to discourage individual munificence. There is no more fruitful investment for the tax payer than that which comes to him from this exemption.

As the sentiment and fact of federal union grew, the latter seemed to depend on growing intelligence and so the national idea of education grew with that of Union. As the structure of our government gave unprecedented force to public opinion, it seemed imperative that it should be enlightened. Sectional and even local prejudice must be removed. Washington, as is well known, bequeathed stock for a national University. Pinckney moved in 1787 that Congress be authorized to establish one. An university without religious preferences was a favorite idea of Madison's. Edward Everett insisted that there was no reason why governments should support primary that did not also as strongly apply to its support of academic education. Thus our history favors it; it is the only republican democratic way: public gifts best stimulate private ones, and may perhaps best direct and aggregate them. If the government endows lower it must logically also endow higher education; as it establishes military and naval training, it cannot logically neglect the civil service of the country. Our highest material and political interests require it, as do our dignity and the duty to see that all the world's stock of genius be developed to aid the world's work. Public should not antagonize private institutions. Both should flourish for diversity and liberty. We must not forget, however, that we have no well endowed universities in this country yet. No educational system can be called national till it makes a "ladder, one end in the gutter and the other in the university"; but let the climber find a real university at the top. Real educational improvement works not from the bottom up, but from the top downwards.

In 1811 a congressional committee reported that it was unconstitutional for the national government to found a university. In 1816 another committee was appointed. In connection with the southern fund the matter was again discussed. The Paris exposition of 1873 convinced our commissioners that the best of our universities were poorly endowed, "but sorry skeletons of what they should be." If we are ever to be a cultured as well as a clever folk, they must be made so free from denominational and local objections as to secure the patronage of the people regardless of sectional or partisan relations. The bill they reported for a $20,000,000 university at Washington did not pass.

The history of Federal aid begins with the ordinance of 1787. The policy of setting apart $\frac{1}{36}$ of the land in new townships for education has since been adhered to, and each State but three admitted since 1800 has received two or more townships for founding an university. This policy was partly accidental, and its far-reaching results were not at first seen. It was certainly not adopted on its educational merits alone. This ordinance of 1787 has had greater effects than almost any single law, and among other things created many of our best universities. Again, in 1836, twenty-eight millions of dollars, which was the surplus revenue of the government, was distributed among twenty-seven states, most of which states applied the whole or a part of it to education. Next in importance to the ordinance was the grant of 1862. Thirteen states gave the proceeds of their land scrip under this act to existing higher institutions, and thirty-three new ones were erected. This act originated in local demands for more practical education. Many kinds of institutions from farm schools to old-fashioned classical schools with some science, according to local interpretations of the law and local needs, sprung up. In New York, Ezra Cornell bought the New York land scrip and located the land in Wisconsin. All administrative responsibility rests with the states, which can use only the income and must replace the funds if lost. This grant was intended to be a nucleus of and a stimulus to private and state munificence. Next came the supplementary act of Congress March 2, 1887, authorizing experiment stations for experiments on soils, plants and animals. The government has also made small grants for specific purposes, and also percentages of the proceeds of the sale of public lands. The saline lands, the grants of 1841 for internal improvement, which some of the eight states benefitted used for schools, aids to colored schools and to institutions in the District of Columbia, all these foot up to a large but incalculable sum. At West Point (1802) where the students are, as it were, paid to come, at an annual appropriation of over $300,000 per year, the discipline is of itself the best possible education. The same is true of the naval academy (1845) which receives about $175,000 per year. The naval observatory which, as is well known, grew out of an act (1842) to build a house for the charts and instruments of the navy, with the nautical almanac and a library of 85,000 volumes, and a new observatory building now approaching completeness, has steadily grown in importance and expensiveness. The national library of Congress [1800] has now more than half a million volumes and a new building on the way. The Smithsonian bequest [1826] now has a permanent fund of over 700,000 dollars, with its five chief series of publications, its library of nearly 250,000 volumes, its vast system of exchanges, and the national museum with nearly three million specimens, and spending more than $250,000 per year and which by its lucid methods of classification and exhibition, and by instruction in a few arts, its public lecture courses, now seems seeking educational fields as well as a closer affiliation with and control of the National Academy, at first sought to cut off all departments not in the line of original research. Thus the museum of art, the meterological bureaus, the herbarium, its library, have now passed under other management. The Bureau of Education, first established as a department, is a great clearing house of historical and statistical information, spending most of its 50,000 dollars per annum in salaries and sending out nearly 20,000 letters and 200,000 printed documents per year, and having 2500 objects in its museum.

In New England the first institutions were colleges and not schools. The basis of an educational system was sought in the higher grades. Motives were religious and not political. The need of a general school system to the state was not yet understood. In general there has been considerable diversity of practices in the different states. In more states than one the history of education has been the history of public lands, and that has been confusion itself. Texas had no national lands. In Rhode Island the early religious dissent delayed action, and the legislature has never helped Brown University. Nebraska, Wisconsin, California and Arkansas seem to have sold their lands best. A number of states have authorized lotteries for education, and others have granted a perpetual annual income to State institutions of a fraction of the taxable valuation. Maryland had an educational policy which would have placed her among the foremost, but very early in this century it was abandoned. Pennsylvania early attempted to establish high schools in every county, and its early colleges were to furnish teachers. This state for a time made grants to five colleges on condition that they would train teachers pledged to teach for a certain time, and aided all institutions having four professors and 100 students; but in 1838 the policy of state control of colleges and universities was abandoned. Tennessee once contemplated an admirable system of education. Perhaps no state has pursued a more wild and ruinous policy than Mississippi. Nebraska has a system of organization by elective regents, which is admirably adapted to keep the university out of politics—a system which Colorado has followed. New York has a history of great interest: the old Dutch Latin schools for teaching classics and writing and arithmetic once like the Swedish schools of Delaware, largely under control of the church; King's college, with its vast board of trustees, representing nearly all the political organizations, religious denominations, and leading financial interests of the state, reverting to an hospital during the revolutionary war, and re-emerging as Columbia college with a board of trustees at length distinct from the regents; Cornell, with 512 free students from the assembly districts, one of the best examples of a state institution, but for which the State has done very little, and last the board of Regents, visiting and exercising a growing control over 301 academies and 30 colleges in the state. Delaware, like Dartmouth College, began by a desire to educate and christianize the Indians. Of the New England states Vermont has shown least appreciation of higher education, and New Jersey has never aided Princeton college. On the whole Massachusetts and Virginia have perhaps shown more interest and exerted most influence. The western states early came to look to the national government for aid to an extent unknown in the original colonies.

The author has given us a very convenient birds-eye view of his subject, and appends useful tables and a most remarkable "historical view of the state of education in the old world," in eight pages. This gives an almost puerile close to a monograph which is best in its earlier chapters, becomes increasingly slight and general as the work proceeds to this end. The field covered is vast, often each state or single institution meriting a treatment as extended as this entire volume. This does not, however, destroy its value as a "periscope," which is certainly great. We suggest another on the municipal school systems of this country, and another on educational endowments in this country. If such compilations require they would also save much time and are greatly needed.

An act respecting the Federation of the University of Toronto and University College, with other Universities and Colleges [Bill No. 149, 1887], pp. 19.

Facts concerning Federation, by JAMES ALLEN, president of the Alumni of Victoria College.

Some further facts concerning Federation, by N. BURWASH, Chancellor, Victoria College, Methodist, May, Feb., 1890.

These and half a dozen other pamphlets before us present a tolerably clear sketch of this interesting and important movement in Canada. A few years ago Toronto University asked more money from the legislature. The denominational colleges in Ontario protested unless they were also aided. A conference of heads of colleges devised the above bill—the fifth prepared for a similar end since 1872. Under this act University college and Victoria college are federating, and the others staid out from the expense of removal. On the new plan nineteen subjects will be taught by the new university, eight others by both the new comers, while besides the eight, Victoria will maintain its complete theological faculty. The incoming new colleges surrender to the University the power to grant degrees save in theology. Nearly half a million dollars is required to federate, but the needed degree of independence would cost much more. Under the new plan the denominational students at Toronto will be brought under the influence of their own denomination, while the students of the incoming colleges will have in addition to what they now enjoy all the advantages of additional arts courses at Toronto without added expense. The three other colleges of Ontario, Queen's, Trinity and McMaster having nearly a million dollars each, as yet hold out. This new movement of co-operation, in place of competition and duplication is full of interest in this country, where conditions are in no other essential respect different from those in Canada, save that in parts of the country institutions are thicker and there is more duplication. The opposition to the movement is still active. Less religious influence near a larger undenominational school, loss of independence by the incoming colleges, and the expense of removal are the objections urged by the university alumni, professors and leaders of the denomination. Mr. Allen has collected many opinions from leading professors in the states and others, on which he bases a vigorous argument that undergraduate work, while it should be strictly disciplinary and mostly prescribed, can be made thorough with little expense for books and apparatus. His estimates foot up as follows: physics, for all needed apparatus for a seven months' pure course, $3,000; for an advanced honors course, $4,000 more;

chemistry, mineralogy, natural history and geology, would bring the total for a pure course hardly up to $10,000. To maintain this an additional outlay of $1000 per year would be needed. The estimates for the cost of a good working library for an undergraduate college, with from 200 to 300 students, range from 3,000 to 5,000 dollars. There must be the right man to purchase, and also to use these books and apparatus, and there must be no elective or "free lunch" system, for these tend to premature specialization. This must come later in Universities and is in comparison enormously expensive. That boys during the most susceptible period of their lives should be brought under the influence of professors who belong to the religious denominations of their parents, Mr. Allen stoutly maintains. The authorities of Victoria University at last gave notice to the Provincial Secretary that they had resolved to suspend their power of giving degrees other than in theology. Federation was thus proclaimed with the University of Toronto after November 15, last.

In this connection it is not obvious why, in the apparently very hasty British Columbia University act of 1890, all future religious, theological and denominational colleges are excluded from affiliation. In Winnipeg the University, which is nonsectarian, as a provincial institution should be, is little more than an examining board, conferring degrees to affiliated denominational colleges.

The Future of American Universities by ANDREW D. WHITE, L. L. D., Ex-president of Cornell University. N. A. Rev. Oct. 1890.

If four universities are too many for Scotland, and twenty-one too many for Germany, what can the United States do with 400? Our best universities spend yearly far more than the vested funds of others. The war waged in the west by little sectarian colleges against the noble state universities by aspersing their religious standing is denounced as monstrous and ridiculous. The pretensions little institutions must keep up is "at the expense of manly self-respect." Their graduates have fine training in mathematics and Greek and Latin, but find themselves ignorant, deceived and beaten at every point by men of real modern training. In the pulpit this is often pitable. All but twenty or thirty of the four hundred should lay aside their "ludicrously absurd" pride and in the presence of a nation of 60 millions, and at the beginning of the twentieth century frankly become what they really are, intermediate schools or colleges, taking boys from schools at thirteen or fourteen, and after four years sending them to a real university. The latter should drop their freshmen and their sophomore classes, thus both would be stronger, and good professors in the lower would be called higher. The presidents of the intermediate colleges would stand better before the country than now.

University Degrees, by F. S. THOMAS, M. D., Syracuse, 1887, pp. 37.

The author enumerates seventy-five degrees, which eliminating duplicates differing by only the inversion of letters are reduced to fifty-six, which are classified as follows: In medicine 11, law 9, divinity 4, fine arts 7, science and letters 13, technics 12. Among the more unusual degrees are B. P. Bachelor of Painting, (Syracuse). D. V. M., Doctor of veterinary medicine, (Cornell), A. M. B., master and bachelor of agriculture. R. P. D., Doctor of political economy. Ph. C. Pharmaceutical chemist. D. E., Dynamic engineer. In mediæval times an academic degree was almost equivalent to an order of nobility or a decoration bestowed by a monarch. The writer suggests a congress of college presidents to prepare a new system of college degrees; that the doctorate be left for the medical profession; that a man append to his degree the place and number of years spent there, (thus A. B. Harv, 4); that degrees be arranged in courses so that the higher presuppose the lower; that those holding degrees should more often append them to their names.

Cheap Academic Titles. L. W. BACON, Forum, June, 1889.

Albert Barnes would accept no degrees, because he would not be called rabbi, nor sink to the common "ruck of doctors of divinity." To wear American titles,—cheap because colleges "grow rich by degrees,"—in Europe is a fraud. The writer disapproves the Harvard habit of "doctoring" the governor of the state, and states that at Yale, "this power is used without scruple to gratify personal feeling or to pacify importunate beggars." The clerical "sex" have these "semilunar fardels" in wild profusion. The use of D. D. is most descreditable, and that of LL.D.—most droll. To remedy the present degredation of titles, it is suggested that the newspapers give the antecedents of each recipient of honorary degrees; that they be given to none who apply; that the faculties and not trustees nominate all candidates so that medical colleges shall not give degrees in divinity as was once the case. Otherwise we might turn these relicts over to Chatauqua to play with till the plaything is worn out.

A National University. A study by **WILLIAM A. MOWRY**, 1889, pp. 18.

The old New England way of state aid to higher institutions of learning, the national policy of aid adopted ever since the ordinance of 1787, Jefferson's plans for the university of Va., are precedents for governmental support. Again with 433 collegiate institutions, 1,507 high schools and academies, with twelve million children in school, "what means Cornell, Johns Hopkins, and now what means Clark University." They mean that while in America the elements of education are more widespread than in Europe, the higher education of the old world is far in advance of anything to be found with us." While Johns Hopkins has been a phenomenal success, we now "need an institution far beyond" it. There is also a long list of scientific and political fields where knowledge sorely needed is not yet attained, but is practicable. What is wanted is now a national university endowed with $200,000.000, invested at three per cent., and thus yielding an annual income of six millions. This would be but one-third of one per cent. on the total valuation of the country. This university should be controlled by thirty trustees named by the president, confirmed by the senate, ratified by the supreme court, and *ex-officio* members, perhaps including ten college presidents, each holding office for ten years, and the board self-perpetuating. Of its students, one should be appointed to try for the entrance examination by every member of the House of Representatives from his district, and every college of good repute, should send one. Fellowships should be given only to those engaged in research, and might be held for one year or for a life time, and all the great natural phenomena of our country should be most carefully studied; these salaries should vary according to merit, and should include our best inventors, novelists, poets, etc.

V.—MEDICAL EDUCATION.

Ueber das Lehren und Lernen der Medicinischen Wissenschaften an den Universitäten der deutschen Nation, nebst allgemeinen Bemerkungen über Universitäten ; eine culturhistorische Studie, von Dr. **TH. BILLROTH**, Wien 1876, pp 508. Supplemented by the same author's *Aphorismen* zum Lehren und Lernen der Medicinischen Wissenschaften, 1886, pp 71.

This work by the distinguished Austrian surgeon still remains the best and most comprehensive study of the general subject of medical education. History traces three medical traditions or canons, the Greek of Hippocrates, the Roman of Galen, the Arabic of Avincenna. These all became dogmas in the universities. Direct practical teaching from doctor to pupil was excluded from the Universities till the middle of the eighteenth century, when it was admitted at Leyden after great opposition from the *doctores rite promoti.* There had long been many volk's doctors, Roman gymnasts and bathers, etc. who did most of the practice, gradually learned the "science" of Galen, and fought their way, first as a surgical guild, into academic circles against the medical faculty after a struggle of 200 years. To "found an University," the medæival state had only to recognize a voluntary society of students and teachers and vest them with certain privileges, and to divide them (in the case of Vienna, 1384), into four "nations," each under a procurator, and four faculties each under a dean. A small staff of permanent paid teachers,—"*doctores actu regentes*," was gradually evolved and students lived in commons in the *bursae* watched by baccalaureates and licentiates. Degrees were very high; sovereigns insisted on conferring them as they did titles of nobility and they defined a man's life-career. After studying the seven free arts of the trivium and quadrivium for two years, the student could take the bachelor's examination which was held four times per year, and gave new rights, duties, a new garb, etc. Then followed the baccalaureate, licentiate and master in medicine, each requiring two years of study, and the final obligation to teach one or two years in the faculty in which the promotion occurred. All was at first learning by heart and then copying, as there were no printed books and reading or writing often had to be learned at the university. The preparatory course to Galen and Avincenna was Aristotle and Euclid, whose voluminously beglossed text must be defended as infallible. A too-bold objector to the medical canon was excluded from the university. From the Alexandrian school 300+B. C. to Vesalius there was no research, and medical practice was a crass empiricism of which the medical curriculum and literature gave no trace. Till 1482, all teachers of medicine must be clergymen. Against this powerful scholastic tradition, anatomy slowly fought its way in the sixteenth century, sheltering itself under clever dialectic exegesis of the canon, meeting the universal abhorrence of dissection of the cadaver (only one of which a year was at first permitted) by pleading its indispensable necessity for surgery,—a struggle very similar to that of our day for vivisection now happily ending, thanks to the great achievements of antiseptic surgery, and the triumphs of Pasteur and Koch which could not have been made without it. First only male bodies were permitted, sometimes direct from the hangman, or sometimes to be prosected in the church yard only. Gradually it was seen that the canons were wrong, and special teachers of anatomy were appointed at various German Universities. Later botany and chemistry were slowly evolved out of the old apothecary lore and crept into the curricula. The surgeon ranked with the barber till anatomy exalted his calling and gradually substituted the state examinations in the place of the guild-master's letter. The academic beginnings of the other leading medical studies are similarly traced with some detail with considerable reading and excellent practical sense by the author who makes no claim to exhaustive historical eruditions in the field.

Now investigation has taken the place of tradition. Science has three duties,—to advance the love of pure science, the endless longing for truth, the constant research which must be regardless of all consequences; to work out new and better ways of demonstration for both results and processes, that as much as possible of the vast and rapidly increasing body of important facts and truths may be imparted; to seek an ever new modus vivendi with all sorts of practical relations. The state must furnish and demand more and more of its universities. The practical doctor must not be so learned as to be conceited, discontented, estranged from the people or to hate small places, and on the average is not gifted enough to carry very much science. Yet he should belong to the aristocracy of culture, and should not begin with practice, nor begin his education with the practial side, or he is a precocious young old man. No doctor ever regretted any amount of time he may have spent in the study of natural science, but often regrets that he had not more. He should understand that the sources of all progress in his profession are rooted in pure science, and the inner constitution and changes in pure science determine everything. Ophthalmology and laryngology owe their existence as medical specialties to the invention of a new scientific instrument. Electro-pathology, pharmacology, experimental pathology which has lately achieved such triumphs, pathological histology are all based on physiology and microscopic anatomy. The training of doctors is a culture question of national importance. They should know chemistry or they cannot understand toxicology, pharmacology, forensic medicine or hygiene. Chemistry should extend over a year, with perhaps special courses on zoochemistry, physiological and pathological chemistry. Special institutions for medical chemistry are needed; there should be uniformity in such courses in different universities in the interests of student migrations from one to another. Chemistry should however mainly come in the philosophical rather than in the medical faculty. Physics is needed, but should be taught by a physiologist who might follow Fick's manual. The mechanics of the hip joint, luxations, electro-therapeutics, sight and visions, etc., should be chiefly practical. Descriptive sciences involve more difference of opinion. Botany has among these the most primevial relations to medicine, for the herbalist was once a practioner. Now anatomy, physiology and development of plants and systematic botany with special reference to medical plants, should extend over a year, as should comparative anatomy and zoology. These latter are not a luxury for doctors, but better than anything else give the power of thorough and profound medical thought and reasoning. Brief courses of "zoology for doctors" should be excluded. Mineralogy and geology should have a modest place, Psychology should mainly come in connection with physiology and pathology. In place of the old hodegetic and encyclopedia, tedious overtures to medical studies now mostly abandoned, should come the history of medicine, a strangely neglected and very important course, in which a peculiar and profitable interest may be created. It is also one of the most important sections of general culture history. Practical anatomy (chiefly in winter on account of dissections) with perhaps a prosector for osteology and syndesmology, and some embryology and histology are important, but not topographical or surgical anatomy. Physiology is of prime importance for all the scientific life of the doctor and should have two full semesters. It should not be divided into physical or chemical physiology for pedagogical reasons. New specialties like "stromes-schleifen" are constantly arising, but many fall back to the mother science or else run into the sand. Concerning purely practical chemical studies, there is now tolerable agreement.

Careful tables showing attendance in all German medical faculties between 1867 and 1874, showed a great decline on courses during the war, but a far greater increase immediately after, and then a steady and general decline. Tables are also constructed to show student fees, salaries, cost of buildings, and running expenses, number of instructors, subjects taught and time given to each, and all these subjects are discussed at some length, and academic expenses are compared with these for sustaining the various parts of the German army—canons with the cost of apparatus, etc.—in a wise that shows in the clearest light the great excess of the latter in a painful way, and a new faculty of medicine and natural science is desiderated. Science is too vast for all worth knowing to be taught at any one place. It would be folly to restrict the name university to only such institutions. Neither should it be split into department schools. The only common element to all academic branches, the bond which holds them to unity in a university is the passion for investigation and for truth that grows now everywhere more intense as the impulse to know grows. In Tübingen the natural sciences were organized into a faculty by themselves with good results. If to this clinics, hospitals, a military surgical academy, etc. were attached, the author's ideal for Vienna would be presented. The work closes with an appendix giving a very hasty view of medical faculties in other countries.

The *pamphlet* is apodeictic. Mere learning and knowing is only having the raw material of ability, and can never make one a member of the intellectual aristocracy. Women are little helped by their learning. They do not love to work over their ideas. The mark of superiority is love of constantly working over the highest and best material. A mass of crude men pass medical examinations. But 12-15 per cent. of the medical students enrolled attend regularly, (partly because the clinics are so made that but few can see to advantage.) Instead of using lectures as "starters" for further home work, they loaf, then cram and complain of overwork. The talent, ethical force, power of accurate perception, understanding of language by students has been overestimated. Careful statistics show that university attendance is but very little influenced by the professor's ability. Excellence in a faculty does not increase the number of students, but profoundly affects their quality. It may even grow senescent or be rejuvenated while numbers remain unchanged. Industrial development in a section quickens the intellect and sends more men to universities. Central locations and growing commercial importance in an academic town helps attendance. University work grows good and great as teachers become better, expenses increase and students grow less in number. Vienna is the Mecca of foreign doctors, 2700 of whom yearly attend chiefly the brief, and very special courses given for a considerable fee by the younger instructors, and rarely touch the regular student courses. The University of Vienna, it is urged, should drop its international character and protect Austrian students. Many of the foreigners are Hungarians, who should be required to take the first part of their course in native universities, and come up to the great centers to pass their examinations. Only poor students will take all their course in one university. In general students of law and medicine in Germany, if not aristocratic, do not have to pay their way by lessons like students of philology and theology. This is a basis of respectability for the profession, but in Austria the medical students are often very poor.

The writer complains that 118 teachers of medicine are too many in one place; that where all the extraordinary professors meet to vote, and even two docents can speak but not vote, official secrets leak out, coteries arise, the government justly loses respect for the faculty whose opinion ought to be the basis of its acts and ceases to consult them on important matters. Medical docents there are given a room with light and heat, and a place on the list of lecturers. Most of them who do not become extraordinarii carry a thorn in their breasts to their death. Others seek these positions to marry well and to help their practice. It is hard for them to get laboratory material, and so a society of them conduct a polyclinic for the free treatment of all who come, and since this pamphlet was written have striven to get it recognized by the government as an examining body.

Some European states now require by law a year of hospital experience before the young doctor can practice, and some have required a *triennium campestre*, or at least let the young doctor loose for a year upon country people before he can settle in the city, and in some the country is divided into medical districts and each young doctor must await a vacancy. In France nearly all departments have their medical schools, and graduation entitles to practice in the department, but only a diploma from a central university gives the right to practice all over France. It is the wise union of all its hospitals in which it surpasses all other cities that makes Vienna such a medical center. Nowhere perhaps is there to-day so hot and on the whole wholesome rivalry between the docents and the older professors as in its medical department. The new specialties that splinter off from the old trunk courses and attract so many Americans and other foreigners, are the work of the young men of whom our author often seems so jealous, and would like to see relegated to small universities to work their way up to the large ones. Here we find the hospital roués, who have been so long surrounded by interesting cases and have come to love them so passionately, that even general city practice, to say nothing of the country, which they dislike in direct proportion as they have specialized, would seem insipid. We are now informed that plans have been drawn and that special efforts are being made to have a new medical building so magnificent that it may vie with the new university building, which cost nearly 16,000,000 marks. At present there is an over-production of doctors in Austria, and if the time consumed by the compulsory military service were saved, and the course proportionately prolonged and enriched, it may be that in connection with changes planned for 1892 great advances will be made. A Cerbeus to watch each fund; man, who has struggled through evolutionary ages to get above animals, not yielding the right to vivisect them for his good; all doctors coming back annually a few days at least to the great university (where all should take their degree but none their first year) to brush up, able if need be to apply the moral treatment of a lie (congratulating the patient on his rounds in the hospital that he is looking so well, and adding to his students miserrimus, mox morietur), a medical hierarchy from the lowest wundartz up, which can furnish enough of either of two noble types, the doctor who prefers a small chance of great success in the hot competition of a city, or him who chooses a modest but sure country increase,—these with what precedes will serve to show the author's ideals.

Some Advantages of the Union of Medical School and University, by WM. H. WELCH, M. D., Professor of Pathology in the Johns Hopkins University. Address at Yale University, 1888.

In this country and in England medicine is chiefly taught in many unendowed schools unconnected with universities, or with only a nominal connection. In Great Britain medical degrees and license to practice can be obtained, not from the school giving the instruction, but only after examination at the university, or the boards of certain corporations. That neither state nor university controls is one cause of the low state of medical education in this country. In Germany medicine is always a part of the university. In Cambridge, England, not only is the new medical school part of the university, but there is an almost academic school of physiology. The union should be real and close. The first two years might be taken in the academic department, and be devoted to biology, comparative anatomy, chemistry, physics, &c., to the scientific rather than to the practical side of medicine. These fundamental studies are most neglected here. These might prepare for an examen physicum, which is the first half of a doctor's examination in Germany. Not only can these be best and most economically taught in an academic department of an university, corresponding to the german philosophical faculty, but they could precede graduation and allow more time for clinics, hospitals, &c., without postponing practice too late. Physiological psychology is a valuable link between the medical school and the university. In Paris the medical school is too apart and accessory. These propaedeutic studies are in no sense professional. Of the twenty German universities, all with medical faculties, thirteen are in towns with less than 80,000 inhabitants. All the vast body of truth in all medical departments not immediately applicable to practice, is best conserved, and such studies as bacteriology are best pursued where the scientific spirit is strongest, viz., in universities.

Remarks before the Academic Council of Harvard University in 1886, by PROFESSOR H. P. BOWDITCH, Dean of the Medical school.

The age of students entering Harvard College has been steadily rising till, in 1885, it had become nearly nineteen. With three years required at the Harvard school, and four recommended for the degree of M. D., a year for hospital practice, and one abroad, and then the unremunerative early years of practice, the young doctor, who has insisted on a thorough training for himself, finds himself established later than in any other land. In Germany the best class of medical students begin their professional studies earlier than boys now become Freshmen at Harvard. In London the preliminary scientific examination, which must be passed by all candidates for M. B., and which marks the beginning of specifically medical studies, is taken before the age of twenty. In Oxford the medical course can be completed by a student entering at the average age of twenty-four, and in France, where the average age of entrance is eighteen, and the course six years, it is also twenty-four. Thus the foreign student, in addition to a better training, enters the profession two or more years earlier. Our academic courses have been developed thus disproportionately less to prepare for professional careers than to give a liberal education more or less complete in itself regardless of the interests of the former. The paper concludes with the proposition to divide the overgrown academic department into (*a*) an academic course of three years, with studies partly compulsory and leading to the A. B. at twenty, and (*b*) a philosophical course of three years leading to A. M., or Ph. D, at twenty-three. The graduate of the first course could then enter the second course, or could pass to any professional school. The philosophical department would then be on the same footing as the existing professional schools, and could develop with the greatest freedom. More students would be drawn to both courses, the best professors would be more attracted to the higher course by the increased dignity and decreased drudgery, and the reproach of trying to force university forms into college methods too narrow for them, of trying to do two things with one tool and that tool not well adapted to either, would be taken away.

Report on Medical Education, Medical Colleges and the Regulation of the Practice of Medicine in the United States and Canada, by JOHN H. RAUCH, M. D., Springfield, Ill., 1890. pp. 167.

This admirable report by the secretary of the Illinois State Board of Health is the sixth, and reports greater progress in the direction of higher education than in any previous half decade. This he ascribes in part to the advanced courses at Johns Hopkins and Clark Universities and also to the fact that the number of colleges which require a graded course of lectures for three years has increased twenty-five per cent. There has been an increase of six per cent. of medical schools that require some sort of preliminary examinations. Florida, Tenessee and Oregon have passed medical practice acts and the state of New York requires a preliminary examination of students about to enter upon a course of medical education. There are now 126 medical schools in the United States and 13 in Canada. In the period included in this report 1765–1890, 149 medical schools have ceased to exist of which 18 were fraudulent. Since 1882 the number requiring an entrance examination has increased from 45 to 124, the number requiring attendance upon three or more courses from 22 to 64, those having chairs of hygiene and medical jurisprudence from 42 and 61 to 119, and 114 respectively, the average duration of term time for a year from 23.5 to 25.5 weeks, The number having five months or more from 101 to 121, and of thosehaving six months from 42 to 76. The number of graduates in all in 1889 was 4,337, a slight decrease since 1882. The Illinois Board refuses to recognize fully the diplomas of 28 colleges because they fall below the schedule of minimum requirements. There are now 27 colleges which require or have decided to adopt at a fixed date a four year requirement. Besides the schools there are now 22 licensing and examining bodies that do not give instructions. There is however no co-operation or uniformity of standards or requirements.

The methods of the different states are exceedingly diverse. In Alabama diplomas of medical colleges confer no rights to practice medicine. Nothing can do this but an actual examination by an examining board which is made up of censors of the state and county medical societies. The county board can examine only graduates of reputable medical colleges their diploma being merely a means of getting before the board. The state board examines all non graduates. The written examination lasts about a week and the papers of the candidate are bound, reviewed, reported on individually and in detail and kept on file at the state board of health. This vigorous law dates from 1877. In Canada all practitioners must be registered. The diploma of each institution conforming to the legal curriculum entitles to registration. In Ontario alone a different system prevails. The medical profession is incorporated, but a council of the college of physicians and surgeons regulates all matters concerning admission, course of study, the licensing of those entitled to practice elsewhere. In Illinois the state board of health must verify and approve the diplomas of all who wish to practice in the state. It may reject them, as it has done since 1877 for 27 institutions, or require them to be supplemented by examinations. Over 2000 applicants with diplomas have been rejected. In Iowa a state board of examiners independent of the state board of health, was established in 1888 which must give a certificate to every one practicing in the state. In Maryland the law regulating medical practice is inoperative. In Minnesota a vigorous state board has just issued its second report. In Mississipi all must submit to a censor's examination. In Missouri a state board issues licenses only to graduates.

RECENT LITERATURE ON INTERMEDIATE EDUCATION.

Das höhere Schulwesen Schwedens und dessen Reform im modernem Sinne. Von H. Klinkhardt. Leipzic, 1887. pp. 168.

In 1886, Louis de Geer, chancellor of the Swedish Universities, expressed an official opinion that the culture of to-day was slowly and irresistibly cutting loose from the language and literature of antiquity, and at the same time absorbing new and indispensable culture-elements, and that schools must gradually transform themselves in accordance with this course of development. In conformity with this sentiment the time of the classical "know thyself" is past for Sweden. Dropping the long and tedious tale of Greece and Rome she recognizes only two problems in the world of to-day: 1, to know and use nature; 2, the improvement and spread of human culture. This "not yet fathomable revolution" has not been achieved without heated conflict. A new system of weights, measures and money, political reforms of a radical nature and earnest strivings of the best spirits for moral regeneration have attended the educational reconstructions which have for some time been one of the chief topics of the press and of legislation. All the most vital traditions of antiquity impel to a renunciation of current classical education. The Greeks had no schools of oriental philology. The government is besought to send each year a few experts or laymen to study still more carefully the great fields of school reform in other lands which should be utilized as pedagogic experiment stations. Such study always teaches the folly of many dominant tendencies, and the beneficence of many plans that seem hair-brained.

In Italy the old-fashioned classical gymnasium is the key to all higher education, the only way to the university, admits no modern language (neither does the Austrian) and begins Latin in sexta. In Prussia real schools and real gymnasia lead by a small side door to the university, and the classical gymnasium requires one modern language, and a course in natural history. In Sweden two modern languages are required. German is in sexta, French or English in quarta, Latin in tertia and Greek in secunda, thus proceeding from the easy to the hard, there is a strong tendency to expel ancient languages entirely from the gymnasia while industrial and female education are unexcelled. A student of education who begins his observations in Italy, passes to Prussia, thence to Sweden follows the course of historical development. Italy represents the simplicity and concentration of earlier times; Sweden is most modern. Germany stands in the middle stage, through which Sweden passed in developing from its former Italian standpoint. For lands still in these planes the study of Sweden is a study of the future.

On the basis of Luther's Saxon School Order, rests the Swedish system of 1571. Only religion, Swedish and Latin (Donatus following the A. B. C. book in the lowest class) were studied. A plan of Gustavus Adolphus, (1620) put into operation by his daughter Kristina, provided gymnasia and higher trivial schools for civil officers and lower trivial schools for merchants and other Burghers. Thus early were the classical or Latin-theological schools found insufficient. Swedish law, social organizations, and the reading of authors rather than grammar and extemporalia were taught. At first the third class of schools was designated as the writing class, the arithmetic or apologist class and led rather a parasitic life, but gradually in the so-called emancipation period (1720-1772) the demand for a "useful" knowledge only became so strong, and civil officers became so many and influential that they would convert school and university into seminaries for state officials, and the curriculum became so over-filled with new topics that toward the close of the last century the entire school system was in a state of anarchy.

In connection with the new school order of 1807 the parties who insisted on science and modern languages, and those who under the able leadership of Silverstolpe postulated not positive knowledge but the formation of the understanding and imagination, became fairly divided on modern lines. In 1820, "apologist" schools, and "learned" schools were distinguished by the important legislation of that year. Both had 32 hours per week at some common topics, but the former had no language except French and German, and the latter had Latin, Greek and Hebrew. The object of the one school was discipline of the other useful knowledge only. In 1825, 1832, 1843, commissioners were appointed to scrutinize and report on the educational system, and at last came the great royal decree of 1849 which (*a*) united apologist and learned schools into an institution which should give instruction in all branches taught in both; (*b*) made the gymnasia essentially preparatory schools for the university; (*c*) the systems of department teaching took the place of the class system. At the request of parents or guardians pupils might be excused from Latin, Greek or Hebrew. As the universities still required Latin and Greek much confusion ensued. Many subsequent laws and edicts, however, have completed a national system in which no student save future theologians or teachers of it studies Greek, and even English may be taken as a substitute without any academic disadvantage. Of 35 institutions with the full nine year course, 18 have both a real and classical course to the end, and others for the first few years. Pupils enter at the age of nine and leave at 18. The three lowest classes have the same course.

It seems a strange anachronism that the church oversees all. The 12 bishops of the land constitute the school board under the cultus-minister. Each bishop has his domain and is supported by a consistory or dome chapter, composed of professors or teachers (very rarely of modern languages or sciences.) The bishop's college appoints permanent teachers, judges cases of gross mis-conduct and applies foundations and state money and administers the finances of individual institutions. The nomination of a teacher is, however, commonly by his future colleagues. The bishop (euphorus) chooses text-books, and often methods of instruction, grants teachers leave of absence and if new positions are desired reports to the minister of instruction, and names inspectors for towns in his diocese other than his own. Inspectors are usually clergymen. They must attend and conduct examinations. If a rector calls a conference the inspector can attend, vote and even preside, and he must report to the Euphorus. In Stockholm is a board of education composed of the archbishop of Upsala, mayor and two aldermen, several pastors, and three members of the academy of sciences and the rectors of the gymnasia. Thus this country of four and one-half million inhabitants is divided into 13 independent school domains reporting directly to the ministry. (In Prussia, between the many institutions of a province of three-fourth millions and the ministry, there is only a single board of seven members of whom at least three are educational laymen. The Euphorus has far greater influence than a Prussian school counselor (Schularth.) A Swedish Euphorus has in his consistory a college of at least six practical schoolmen with whom his relations are very close. This sponsorship of the school by the church on the whole works well, but propositions for an entire change in this respect have been made.

Near the time of the final examination at real schools and gymnasia, the minister names from one to four "censors" for each institution to attend, participate in or conduct its oral examination and report to him. These are mostly university professors, and this system began in 1862, when this examination was first made at the same time equivalent to admission to the university. The veto of the censors, even if there is but one, prevents graduation. Their report to the minister is often oral. Three local citizens are also appointed as witnesses of the oral examination. They may even select texts and give out problems. As examinations are held semi-annually during the first five and annually during the other years these duties are considerable. This institution is often criticised and may be compared to the participation of laymen in synodal and other church assemblies but has much to do with the remarkable educational interest among all cultivated classes in Sweden, where the daily press has stated leading articles on education once a month.

The town itself has little influence over its schools but only duties to them. It must provide a healthful building spot, spacious enough for play room, etc., and a house for the rectors, and keep it in repair, or pay him an indemnity decided on by the royal board, and sometimes erect the school building and provide and pay for extra or assistant teachers. The salaries of all teachers are fixed and paid by the state. They begin as "adjuncts" at 1500 krons (1 kr. = 30 cts.) and are advanced every five years, or with "superior" certificates at increased pay. Instruction is free, but pupils must contribute to four funds: (1), lighting and heating; (2), library and supplies; (3), premiums and poverty; (4), buildings. From the first two nearly half the pupils are excused, and out of every 108 krons received from all these sources the state pays 76 krons [76,210 kr. in all] back in the form of stipends and prizes.

For the younger children [Sexta] there is but one teacher. In later years there are several instructors or one "class teacher" who has most hours and the general oversight. From upper tertia on instruction is given more by departments and less by classes. Department teachers are called lectors, class teachers "adjuncts." The latter may occasionally give instruction on subjects for which they have no license. Larger gymnasia and real schools have as many as eight lectors representing as many departments. The rector is *primus inter pares* rather than an autocrat. His pay is larger, but his appointment is for a term of five, and then ten years, while lectors and adjuncts are for life. He is usually promoted from the staff of the institution in which he was a teacher, which is unusual in Germany. There are 34½ weeks of school and 17½ of vacation. The latter covers the entire summer months. In matters of instruction it is held to be axiomatic that the life of to-day is dominated by science and mathematics. This the average taxpayer in Sweden now sees and heartily believes. The mother tongue and its literature is given the first place and next comes the foreign language nearest akin to the vernacular. In general in the Greek, or full classical line, are found only future theologians and classical teachers; in the Latin line, as in the real gymnasia, are found future jurists, physicians, and teachers and in the upper real schools, are found technologists.

By the law of 1878, in lower grades every two, and in higher every three' hours instructions must be followed by two hours of intermission, and these two or three hours are themselves separated by pauses of five or ten minutes. Only half an hour's singing and gymnastics can come in this two hours intermission. School hours are usually from seven to nine in the morning, from eleven to two, and occasionally from four to five. A school doctor treats poor children gratuitously, examines every pupil at the beginning and end of each term and studies all that can effect the health of the children. His reports must be made each semester on each institution. There is a daily half hour of gymnastics. Sometimes an entire school-day is given up to snow-shoe running and skating with prizes. During the three weeks Christmas holidays the price at the many warm baths (which the climate has made a favorite institution) is reduced one-half for school children. Bayonet and sabre fencing for the two upper classes is given one or two hours per week through the entire course. Very peculiar is the annual hours a day for 8–10 weeks at target practice with army rifles. This is done with military discipline, and students take turns in commanding. This is done with more seriousness than the soldier-play recently introduced into French schools.

Sweden presents an unusual illustration of the rule that reforms never proceed from teachers or school officers but from public opinion. Many further reforms are now impending and will no doubt profoundly modify universities. Latin and Greek were placed later and later in the gymnasial course, and have finally taken a modest place in the university as one special department beside others. There is such popular prejudice against these languages that a parliamentary orator it is said will lose votes if he makes Latin quotations in his speeches, and that even jurists and physicians do not study it, and that the 8000 hours said to be spent by a German gymnasialist in classical study were lately declared in a Reichstag speech to be lost time. Whether so radical a reform can be permanent without more conformity in neighboring lands may be doubted. A very important committee in session in 1882-4 made perhaps the fullest educational study ever made in Sweden and reported in favor of important further reforms. Among these were the necessity of a preliminary medical examination covering not only chemistry and physics but most especially botany and zoology as the proper kernel of medical training. Pedagogical study for gymnasial teachers is usually during the trial year. The minister assigns the candidate to one of the few practice schools where he teaches in three chosen branches with criticism, the department teachers in each branch receiving special pay for assisting him. He must not teach over six hours per week. He also hears and is examined on lectures on the theory and history of pedagogics. The universities of Sweden are very unsatisfactory yet. The faculties are (with the exception of the Carolina Institute at Stockholm) too medieval, and students often linger 10 to 12 years at the university before taking a degree. But the great reform of an unitary course for all professions and walks in life and continuing from three to six gymnasial years before the ways diverge, or before even a classical course or special or professional courses are elected or begun is a great gain. On the other hand it should be borne in mind that this "reform" has been coincident with the remarkable advance of the peasant class in intelligence and influence in that country where even a parliamentary leader continues to wear the old half peasant costume of his earlier life. It is with this class that the deposition of classics is most popular.

Die Erziehung der Deutschen Jugend. VON PAUL GUSSFELDT, Berlin, 1890.

This book has made a great impression in Germany, partly by its popular aphoristic style, partly from the radical reforms it advocates, and still more because the author is thought to be in part, directly inspired by the young Emperor. A great and decisive struggle impends in education, and although on this topic an angel would not be believed, the author with no qualification but experience, and addressing parents, not teachers, pleads for a less artificial training for boys. Every child is at first an original genius, and becomes a regulation man later, and mother-love is the great miracle. Child curiosity is boundless, but however unanswerable its thousand questions, they should be treated seriously and be so met as to lessen the inner unrest that prompts them. They should never be bluffed or fooled, should live much alone, much with older children, but little with adults, and these few. Sometimes flogging does good, like rain on a thirsty land. All prolonged punishments develope spite and ugliness. Lies are nearly always due to fear. Impertinence should always be met by an instant box on the ear. Reverence, obedience, order and cleanliness, simple food often changed, simple dress, cheap toys; —these constitute morals and health. The family educates, the school instructs. We want less knowledge and more culture. Knowledge is gymnastic apparatus of which culture teaches all possible uses. From eighteen to twenty-eight or thirty is the period of information, and most training before this should be for culture; life depends on how these years are used. Intellect is a tower of Babel, a box of Pandora, too much school knowledge cripples for life, and a father who sent his son abroad from the final examination of the gymnasium to forget school nonsense is commended. Memorized knowledge is vulgar, raw material of culture which seems incompatible with real knowledge. Nothing should be taught that later life will destroy. Boys must follow a rigid course of study, but must also have time and opportunity to develope an independent life, giving full scope to individuality. From this latter may spring the talent of the investigators. So-called practical education comes nearer culture than does information, but cannot be made identical with it, great achievement requires one-sidedness, which even defect may cause. Few men of so-called "harmonious" development have ever accomplished great things. Scattering energy makes men or boys commonplace. Boys hate the grammar and forms of Latin and Greek, but love the content of these literatures if they are allowed to come at it. The best of these authors should be rescued from philologists and taught with the aid of translation along with a few vocabularies and other rudiments of the languages, but Cicero's stilted and involuted kilometer sentences so dear to grammarians should be left alone. The reforms proposed are as follows: Boys should be at school twelve hours each day. Here they should take the day meals, the food being a matter of central attention, and should be left to their parents only evenings or holidays. Of these twelve hours, four or five should be given to intellectual training, the rest to free exercises, plays and games, gymnastics with apparatus, skating and swimming, to which great importance is attached, dancing and sports, and lastly industries. The work of each hour should be a rest from that of the preceding, and a preparation for the following hour. The studies should be as follows: I. the German language and literature, the former taught in every other study and by composition writing, chiefly descriptive at first. II. French, because it is most exact and organic. III. English, because it is the world-language. IV. Mathematics. V. Descriptive natural sciences, physics and astronomy, taking precedure and being taught historically. The catechism of nature reveals the divine in every word. To the atheist only is his work so satisfying that God himself is stopped short of. Religion rests on morals and on religious feeling. The state may give religious culture which it needs, but religious knowledge is best left to denominations. History should be so taught as to show the virtue triumphant over evil. This idealism is the best start it can give boys. This is culture and should engage boys of the middle and upper classes when the university acquisitions and special and professional study may begin. Thus all is to be re-based on child study, the education of the body, in which save for compulsory military service, Germany is said to be chiefly deficient (whence its growing love of the beer house is derived) and on a mental training almost as "modern" as that of the new Swedish code. The author's ideal is evidently developed from the best schools of England, but with important modifications. Such an intern system would be expensive, but as Dr. Th. Bach of the Falk Realgymnasium of Berlin says: it is at once practicable only for the upper ten thousand of Germany, and can be realized for the people at large and the poorer countries only by asymptotic approximation. LeGarde condemns it as a work of decadence, saying the fact that a German could write so shallow a book is proof that an educational reform is necessary. Karl Franzel himself, a well known "modern," while praising the author's honesty and enthusiasm calls him after all something of a fanatic and his plans too military and social istic. The organ of the German classical teachers calls the author ignorant and presumptuous.

Rembrandt als Erzieher. Leipzic, 1890. pp. 329.

This anonymous book is making a great sensation in Germany where it has nearly reached a twentieth edition. It is written without chapters or sections, as LaGarde writes, whom its contents suggests, while its standpoint is that of E. Von Hartmann. It is a Rousseau-like plea for a return in education and life to nature, instinct, the naive or the unconscious. Art is the watchword of the near future as science is of the present. Bismark discribed politics as the statesman's work of art. Gœthe conceived religion as the art-work of great religious founders. The philosophies of the world are the plastic art of thinkers, and modern science is broadest conceived as art.

All art so far as it is genuine springs direct from the volks soul and its most immediate outcrop is myth, tradition, magic, etc., as even meteorology shows pleasant weather proverbs to be, are true to science. Rembrandt, as indigenous and at botton German is thus a type. His individuality is wholeness. Like Luther he stands upon it and cannot do otherwise. *Sum, ergo cogito*, would be his motto. He is a type growing from within outward, and not made to a pattern from without inward. He is not a modern hero, nothing in himself and wanting all things, but like an oriental hero he is all and wants nothing. Individuality is variation from the norm, the average, and is the root of art. Modern jurisprudence has lost sight of conscience, philology is banausic and has lost all interest in literature. Darwin gives us merely the raw material of another great bibliogenesis. The true artist in science or letters is he who does, makes, thinks all things as the volk's soul thinks it. As human activity wanders from this it becomes irreligious as well as unphilosophical. Once schools taught to think and not know. Now they teach to know and not think. Muses and museums have been each inversely as the other. The Greek gymnasium was the converse of the German. Newton said that he was understood by but four of his contemporaries, and Poggendorf's Annals rejected Mayer's first paper on the heat-theory. New wine not in old bottles means that the new life of Germany under the new emperor is not a matter for the professors but for youth. Thus the fatherland will experience a new birth, for the feelings of the masses wrought out in the thoughts of leaders; this is forever youth, art, education. Science is for art what scholasticism was for religion. The present is an age of mental misery and confusion, and is described by the phrases, barbarism with electric lights, conceit of knowledge and brutality of feeling, the age of Zola and Du Bois Reymond and Momsen, mechanism, Americanism, the age when professors thrive and artists decay, which worships what it should burn and burns what it should worship, which crucifies the Christ who is the highest type of artist. There are signs however, infallable and many, that the Gallilean will conquer. Return to childhood is now the watchword; old races cannot then be born again. Germany has been ruled from the top downward long enough. Now Prussia must be peasantized, and re-developed from the bottom up.

The book is thus querulous, pessimistic, written in grasshopper gait, with a chaos of bright phrases and not a practical suggestion from end to end.

ELEMENTARY EDUCATION.

THE RECONSTRUCTED PRIMARY SCHOOL SYSTEM OF FRANCE.

Introductory.

It is in primary education that most was needed and has been done in France. This remarkable pedagogical development has been attended by a political and social advancement hardly less striking. As Marion shows the idea of the rights and duties of the state in matters of education was asserted by Condorcet and Lakanal, forgotton under the Empire, scorned during the Restoration, reasserted by Guizot, and partly realized by his law in 1833; ideally completed by Carnot in 1848; extinguished by the law of 1850; vainly reasserted by Duruy; worked out with enthusiasm by J. Simon, but is now established beyond reach of reaction. The formula "obligatory, gratuitous and lay instruction," simple and familiar as it is in America, marks in revolutionary France the guarantees of social order which the state imposes on its members who hold its lot in their hands, who had long lived under a state religion, and were greatly shocked by the change. Again, education is not a minimum of instruction for a closed class, but the first step towards a complete culture, where all may now freely aspire to all, and where the state must now develop and use all its reserve of living forces. In 1871, when it had already been felt that the role of the school was to be made the instrument of nothing less than national regeneration, details and partial reforms were at first essayed. Geography, then gymnastics, to make better soldiers, were first officially reformed, but it was soon seen that this was naive and that the whole system must be recast.

Industrial training must give taste and respect for labor and manual cunning, and lessons in things must teach to see. Good pedagogic tradition was lost, and mechanism, psittacism and mnémconique prevailed, and still have all the advantages of inertia on their side. To bring the life, active methods, common sense of the few pedagogic elete against the majority and to subordinate the average teacher, to train in liberty which is more than lessons, and to attain in all that simplicity which is either the gift of the strong or the last fruit of experience, to combine the maximum of utility and of education; this was the ideal. *Optima simpliciter* is the formula by which plain and elementary principles have placed the broadest moral training in the place of sectarianism, civic duties above parties, and that in a land of dissention, where every step met with the strongest resistance. In this new school literature, the better principles of the French revolution reappeared, sometimes as if the reform in moral and civic education had been consecrated to them. Eminent leaders brought down the wisdom of the heights of science to the children of the masses in many admirable little text-books, while at the same time the school bred book-superstition has abated in both morals and science. Nothing so disposes to good sentiment as health, and a feeble body is a bad councellor in all moral matters. Military exercises, vacation colonies and caravans, *cantines scolaires*, industrial training, and even the general diversification of types of even primary education to suit the diverse categories of human needs; all these make for hygiene. The great public awakening has stimulated private initiative in many ways and places. M. Tourasse, *e. g.*, after spending half a million francs in the Department of Basses-Pyrénées for prizes for attendance and various lines of excellence, for practical education in foresight, in organizing child societies for mutual aid, and developing association and social life, mutuality and insurance, economy, savings banks, and in teaching arbitration in boy-quarrels, has now given an associate, M. Piche, a large sum to extend this work and to efface the demoralization of misery among children and unfold sentiments of union and solidarity.

We present in the following pages a general view of the organization of primary instruction, which has undergone since 1875 the most radical transformation in the history of education, a transformation which includes a change of administrative policy which is profound, and a recreation that extends to most detail, discentralizes and vastly enlarges the sphere of, and widens and deepens interest and belief in elementary education. Here the reforms are approaching completion while in secondary and higher education they seem to be only well under way. In the present number of this journal we treat only of organization and administration, etc., and withhold an account of the pedagogic methods in the various subjects of the curriculum till a later number.

Official Literature on Primary Education and the Press.

Besides the laws in a series of large volumes, and the official reports of buildings down to 1887, the following are the chief sources of information used:

The Dictionaire de Pédagogie is the latest, and with the exception of the ponderous German pedagogical encyclopedia of Schmidt (the total revision of which in a new edition is about complete), the most comprehensive original work of its kind ever published. It is devoted to primary, which includes what we call common school education only. The work is published, in print almost too fine for many eyes, large pages and two columns on a page, and 6584 pages in all, by the vigorous and enterprising house of Hachette & Cie, and edited by F. Buisson, the inspector general of primary education in France. It is divided into two nearly equal parts. The first comprises pedagogy, law, history and administration, and biography, and is the work of 270 co-operating editors. The second part is devoted to the subject-matter of education, and is written by 140 co-laborers, mostly professors and specialists. This great conversation lexicon was issued in instalments, the first in 1878 and the last in 1887. It began therefore while the old organic law of 1850 was in the main still in force in France. Its contributors include most of the leaders in the great transformation of primary education which were almost legion and nearly finished during those years. These changes added zest to many pages while but comparatively few have been made obsolete by them. It is of course a well known work and indispensible in every pedagogical library.

The Statistics of Primary Education in France are published exhaustively every five years. The last of these quinquennial reports was printed in 1889, and brings the statistics down to 1886–7. According to this, the report for 1891–2 will appear in 1894, and will be the fifth since this series began. The last is a quarto of just 400 pages, and like the others published by a special committee of which M. Lavasseur is the head, and which has striven above all to work out a fixed set of schedules and plans. Thus all four volumes form a whole, the first 1876–7, antedating the revolutionary laws of 1881 and '82 making education free and compulsory, those of 1883 and '85 on buildings, and the culminating law of October 30, 1886. This and the new financial reorganizations will show their results in later volumes. Special tables in the last report account for the 500 million francs expended for buildings alone. This installs this branch of the public service in a way which future generations will not fail to appreciate. In all there were in 1887, 80,209 schools in France, an increase of 3,711 public, and 863 private schools since 1882. The lay public, and clerical private schools had increased at the expense of lay private schools. Private clerical schools in 1887, numbered 9,565. Not including maternal schools there were 5,526,365 pupils, an increase of 185,154 since 1882. The school census was taken in all France on the same day (Dec. 4, 1886, and June 4, 1887,) when the actual attendance was 91, and 88 per cent. respectively of the registration. The budget for primary schools in France for 1887, was 173 million francs, of which 38 millions was borne by the communes. Beside these a resumé of the état, in a smaller pamphlet of perhaps 150 pages, is published yearly. The corresponding report on superior education appears only once in ten years, and the first on secondary education was published in 1889, ending with the year 1887. The quinquennials on primary education are a remarkable record of a remarkable movement.

The method of presentation is lucidity itself, colored graphic charts depicting a mass of details at a glance, the uniform plan facilitating comparison, while the movement is one of the most remarkable in all the history of education. We shall treat these reports more extendedly later.

Recueil des Monographies Pédagogiques. This is a collection of sixty monographs by nearly as many authors, all of whom write over their own names, upon as many subjects, and pretty well cover the field of primary education. It is published by the minister of instruction and fine arts, in six large volumes, containing in all 4,133 pages, and is edited by the indefatigable F. Buisson. The whole was issued in 1889, on the occasion of the Exposition and for the use of jurors, visitors, etc., and forms the second series of *Mémoires et Documents Scolaires* of the Musée Pédagogique. Henceforth says the editor, in presenting it to the minister, it will be impossible to speak of our organization without this work at hand. It is a veritable book of gold for French primary education in 1889, and supplements and rectifies the Dictionaire de Pédagogie to date. It is by far the best source of information.

Revue Internationale de L'Enseignement.

This is a monthly journal now in its tenth year, published by the society of superior education. Its editor in chief is Edmund Dreyfus-Brisac. He is assisted by an editorial committee of seventeen, of which Berthelot, president of the society, is the head, and among whom are Boutmy, head of the free school of political sciences, Taine, Pasteur, P. Janet, Dastre, Marion and Bréal. On the whole, this is fairly entitled to be called now the best existing educational journal in the world. Like several other good things in France, the Institute of M. Boutny, the Musée Guimet, the Pedogogic Dictionary, it is a private enterprise. It contains a monthly chronicle of educational activities in France and other countries, particularly in the field of higher education, and prints official documents. It is progressive, well informed, liberal, and justifies the title of being international, even in France. Its digest and criticism of current educational literature is its weakest department. As this is perhaps the field where the most important service can now be rendered, this defect is grave.

Le Revue Pédagogique. This monthly journal was founded under its present name in 1878, and is the organ of the administration. It is however published by Delagrave, 15 rue Soufflot, Paris, and directed by MM. Hanriot & Cocheris. In 1882, it was also made the organ of the Musée Pédagogique (1879). It is not so much an official bulletin or a collection of administrative documents as an open field for free discussion and advanced studies, and is designed also to provoke personal work and to furnish material with which to vindicate all worthy opinions, to be a tribune where the wise can make their testimony and experience heard, and ask their questions as in a sort of permanent universal congress. It is directed by an editorial committee presided over by M. Gréard.

The Department Bulletins. In 1870 there were forty-eight of these. Now every department in France except Oran has one. They are usually sent freely to head teachers who make their contents known to their subordinates. They are the property of the school, and contain important ministerial circulars, programs of conferences, acts of department councils, appointments, instructions of inspectors, educational news of many sorts and often memoirs. All have a local character and most are monthly. They are organs of teachers' aid societies, and have had much to do in developing school libraries and for the academic inspectors are a powerful means of impulsion.

In his excellent article on *the pedagogic press* of France from 1789 to 1889, M. Beurier, the director of the musée pedagogique describes nearly sixty educational journals or bulletins. Most of these have ceased to exist, but "not less than one hundred" have been created within the last ten years.

This includes all educational periodicals, even *annuaires* and society bulletins. Nearly a dozen geographical societies publish bulletins on local geography, and some are by educational societies. The new *Musée Scolaire* (1887) is to encourage science in primary schools. The *Ligue* began in Jan. last, an organ for advancing physical education. Some schools and even orphan's homes publish bulletins. *L'Instruction primaire* (since 1879), represents maternal schools and has 20,000 subscribers. *L'instituteur* (1882), is anti-utilitarian. *Le Progrès* (1882), contains each month a digest of all the chief journal articles on education, and a portrait and biography of some eminent teacher. *La Revue d'Education* (1887), has a theoretical and a practical part and "suggestions." *L'Education Naturale* (1887), founded by P. Best, still treats programmes and teachers' examinations. *L'University (Cerf)* is the organ of the society for the study of secondary education. *L'Esneignement secondaire des jeunes filles* (1882), is the chief and best in the field. *L'Enseignement manual et experimental* (1888, Gédalge), should be named. Besides these journals suited to special subjects, often elementary like *le 'Journal des Mathêmatiques Elêmentaires*, are others designed for those attending each of the chief examinations. Hardly a great journal of any kind exists we are told, that has not at least a weekly article on education, not to mention those in the monthly and quarterly reviews.

CLASSES OF PRIMARY SCHOOLS.

There are six kinds, as follows:

I. *Maternal Schools.* These have taken the place of the Salles d'Asile. They receive children of both sexes from two to six. A committee of lady patrons may be nominated for three years by the mayor and the inspector whose chief duty is to watch the hygiene of the school. The younger children are brought to be kept while their parents work and the older are taught. Since 1881 the state aids in their support, requiring that they shall not be established in villages of less than 1200 inhabitants, and requiring a second teacher if the number of children attending exceeds 50.

II. *Infant classes.* These have no independent existence but are links between maternal and primary schools, and are annexes now of one now of the other. Like the former these are aided but not required by the state.

III. *Elementary Primary Schools.* Here the obligatory education from six to thirteen is given. The age of admission is varied to five or seven according as there is attendance in infant classes or not. They are for boys, girls or mixed. In the former most of the teaching must be done by men and in both other classes by women. Where the population is over 500, girls must have a separate school, and each place with 20 children of school age must provide a schoolhouse.

IV. *Superior primary schools and complimentary courses.* These differ only in that the former have their own building and directors and the latter are annexed to III, and under its directors. The latter can have but two years and may have but one, the former two or more. If three at least they are écoles de plein exercise. Some are professional and are partly under the minister of commerce. To enter either the pupil must have won the state certificate of primary studies, and in both may receive state stipends of all the five kinds later described and including study abroad and secondary studies. The locality is required to support neither, but instruction in both must be free to all, and the state is ready to aid by a fixed and liberal schedule.

V. *Manual Apprentice Schools.* Technical knowledge, and dexterity is the object to be sought by these schools according to their organic law of 1880. These differ from the professional schools above (IV), in being more industrial, in being aided by the budget of commerce, and in so little else that it has been proposed to fuse the two.

VI. The 170 departmental *Normal Schools* to be more fully described later, which with the elementary primary schools are the only ones the creation of which is obligatory. Others if decreed by the locality may receive state aid for a time varying with circumstances.

While the great mass of children attend and most money is expended for III, each of the other classes is important, and all but VI numerously attended. To make the enumeration complete the following kinds of schools should also be described to show how manifold and diversified French primary schools now are:

Country Schools. (Écoles de Hameau.)

These are schools for peasant laborers in remote and sparsely populated regions. They existed legally only since 1867. Although their history is obscure it is probable that these populations have not been totally without schools, for as early as 511 A. D., the Council of Orleans ordered each curé to keep school in these parishes, and decrees and capitularies since have repeatedly enjoined this. The law of 1867 was permissive rather than mandátory. The teachers were bad and the pay very small. The law of 1875 doubled the pay of the "adjuncts" charged with these schools. This placed them above the adjuncts of the ordinary schools and below the titular teachers of the fourth class. By the decree of 1881, schools of over 25 pupils between six and thirteen ceased to be annexes of more central schools and their chief teacher became an independent titular. It is now recommended that schools below this number be regarded as classes, and be taught by probationers (stagiaires) under the direction of the school in the chief town. There were in 1886, 5,603 of these schools in all France with less, and 1612 with more than 25 pupils each, attended by over 300,000 children. Here we see the weak side of compulsory attendance in France and much as has been done, much more must be done before the obligations to attend can be completely enforced. Often girls attend in the morning and boys in the afternoon. This leaves some children to assist in home work in both parts of the day, and in larger schools quite as much is done with half the number of pupils in these half time schools. School lasts only four or five months in the year. They are practically one class schools although the law of 1882 provides for three courses. The monitorial system has been tried, but children of ten can hardly work this system.

Classes of Adults and Apprentices. In 1883 there were nearly 30,000 adult courses in France; now there are less than 8,000. They were designed for very illiterate persons and under the new system the number of these has declined. The state is now less ready to aid and thus the burden of such schools fall more heavily on the locality. To establish such a course the municipal and then the department council and finally the minister must approve, and the forms and processes are about the same as in establishing a new school. The state now aids only if the course lasts five months, and if the resources of the commune are exhausted. If a public teacher aids, the pay is arranged between him and the commune. There must be at least three sessions of an hour and a half each per week. All pupils must be 13 at least and must have satisfied the law of obligatory attendance and of child-labor. In adult classes each person must have a copy book which must never leave the school in which lessons are daily entered. The inspection here is the same as in primary schools. In connection with these courses the reader is referred to the admirable account of the present state of patronage and the education of apprentices by M. E. Cacheux in the collection of monographs above.

The National Professional Schools. The official organization of these schools was very incomplete before 1880. Higher technical instruction in the School of Mines, the School of Bridges and Highways, the Central School of Arts and Manufactures, the Conservatory of Arts and Trades and the Agronomic Institute, was well developed as was secondary technical education in the schools of arts and trades at Angiers, Aix and Châlons, the Agricultural schools of Grignon, Grandjouan, Montpelier, the commercial schools, etc. The first trained the leaders of great industries, the heads of large business houses, etc., and the second their assistants and higher subordinates. Although the state had done nothing, private enterprise had not entirely neglected the primary technical training of working men. Paris had its municipal school in the boulevard de la Vilette, and its clock and watch-makers school; Reims had its municipal school of dyeing, spinning and weaving; Nîmes its school of laces and finer textiles; Limoges its ceramic school, while Rouen and Havre had apprentice schools. As the professional value of French skilled labor seemed tending to decline the government undertook to organize a few model schools which should serve as types and encouragement for other spontaneous efforts. In 1881 the first of these national professional schools was founded at Vierzon. The next year two others were established at Armentières, and at Voiron. Each comprises a maternal, or elementary primary and a superior primary school. The lower years were first organized and the higher years of the superior primary courses were installed only Oct., 1889. A local council named by the Ministers of Instruction and of Commerce exercises general surveillance, and suggests improvements. The directors and financial agent who is under bonds are named by the minister as are the custodian of the students an adjutant who has general supervision of the shops and teachers of gymnastic and military exercises. Professors and adjunct masters teach science and literature, and auxiliaries direct drawing, modelling, modern languages and music. The chief of shop work is assisted by foremen. All the instructors are appointed by the minister. The foremen are changed often, in order the better to keep up with industrial progress in methods. There are also directors and assistants each in the maternal and lower primary school. The schools are free to day pupils but boarders pay 500 francs per year. Day pupils bring their dinner which is warmed for them at the school, or lunch is served at cost. A well supervised room is provided for children till their parents return from work. Stipends and partial stipends are provided for children who pass the required tests. In principle those receiving these little scholarships ought to live in the building and usually receive 500 francs. Family stipends yield but 400 francs.

For the maternal schools Fröbels' method, considerably extended and developed, seems to satisfy the need of children from four to seven. Later comes drawing, modeling, work on woods and metals which is basal. The aim is to cultivate manual skill and to avoid premature specialization. Architecture and ornament come later and all ends and focuses in a special programme corresponding to the industries of the region. At Voiron there is weaving, cement and chemical industries; at Vierzon, agricultural material, ceramics, tiling, paving, etc; and at Armentières weaving and spinning. There are excursions to factories, mills, workshops. At the end of the year instead of prizes are appointments to vacation tours free and often quite extended.

At Armentières the installation embraces 40,000 square metres, of which 11,000 are covered by buildings arranged in symmetrical series, one each for the director, financial agent, the maternal school, the elementary primary, the gymnasium, the infirmary, the higher school, and the shops. A net of telephones connects all. The primary school has four classes of 48 places and 60 square metres each, a covered yard 200 metres square, and a recreation court of 800 metres. The maternal school has a closed play-yard 210 metres square. Class room, saloon with graded seats, court for play with shrubs, etc. In general the basement contains kitchens and class rooms, the first floor dormitories, and the third is for the service. There is a cabinet of natural history, another of physics, and a chemical laboratory. There are three motor engines of 30, 6 and 4 horse power. The weaving shop covers 472 square metres and in it all stages of the industry are taught. There are two other large workshops, one for iron and one for wood, and a botanical garden of 1,000 square metres.

At Vierzon the buildings occupy 8,600 of the 40,000 square metres of ground and are in a series of independent pavilions, each with its own independent service. Here a normal section to educate teachers of manual training was established in 1888. At Voiron the buildings occupy 11,000 out of the 40,000 square metres. In all three of these professional schools there were in 1889, 1,418 pupils. Most pupils become foremen, directors, manufacturers, and a few pass up to the school of naval mechanics at Brest, the school of arts and trades at Angiers, Aix, etc.

Private Schools. Every school, aided however little by the state, is subject to all the regulations of public schools. For schools not thus aided the age of the instructors is fixed by law. The examination and discipline of directors are the same as in public schools, but the former is relaxed for assistant teachers. The same is true of heads of private complementary courses. Only French men and women can become teachers in public schools. This rule is relaxed for private schools. Aliens, if admitted to civic rights, of legal capacity and age, and expressly permitted by the minister and the department council, may teach in and even direct private schools. No foreign diplomas, certificates or brevets are sufficient till officially pronounced equivalent. Inspectors can enter at any time and inspect text and copy books and question on all they hear. Private schools choose their own methods and text books, barring those interdicted by the general council. To open a private school application must be made to the mayor and posted a month, when it may be opened if he or the inspector do not object. Without this permission the head of the school is subject to fine, and for a second offence to imprisonment. Teachers may be silenced and otherwise punished, and pupils may receive prizes and stipends from the state, as in public schools.

Laws of Primary Education. The principle of liberty in education, although recognized in 1833, was only established by the law of Oct. 30, 1886. By this law all kinds of schools, public and private, may be established subject to certain rules, and the heads of all private primary schools are free to choose methods, programs and books not expressly forbidden by the Superior Council. On March 28, 1882, primary instruction was made obligatory for all children from six to thirteen. An indispensable minimum of knowledge is enforced, which may be acquired at home or in a public or private school. Only the liberty of ignorance is proscribed. This law is executed by a commission scolaire composed of the mayor, a delegate, and members named by the municipal council to the number of at least one third that of the council. This committee prepares annually a list of children of school age. It can never enter the school building nor influence the matter or methods of teaching. They first notify delinquents detected by their monthly inspection of the register and judge the causes of absence, then post their names from two to four weeks on the doors of the town hall, and may bring them before a justice of the peace for police penalties. Appeal may be made by inspector or parents to the council of the department. Even children taught at home must be examined annually, beginning with the end of the second school year, on the matter taught to children of the same age in the public school. If they fail without satisfactory excuse they must be sent to a public or private school, which must be named by the mayor, or the parents name is posted. By the law of

1886, only lay teachers can teach in public schools. All members of religious houses, and all clergy of whatever sect, are thus excluded, and schools made religiously neutral. Läicization must be assured whenever a new school house is erected, and must be completed five years from the date of the law. School curricula are secularized by the same law. By the law of June 16, 1881, primary education was made gratuitous. Thus the sad distinctions between paying and free pupils was effaced. The state thus makes accessible what it makes obligatory. Religious bodies can neither inspect nor nominate teachers, and all religious instruction must be given outside school hours and houses. Morality taught by lay teachers has the first place in French schools.

Obligatory Education. If the local school commissioners have hardly been entirely faithful to the mission of enforcing the law of obligatory attendance, the caisses d' écoles have in great measure remedied the effects of this lethargy. The juries who examine children taught at home—orally only if the written examination is unsatisfactory—although in 1884, when this law first went into effect they examined but 2,864 children, did much to stimulate both instruction and school attendance. In 1888, the commissioners in the twenty wards of Paris met on an average over forty times, summoned nearly 23,000 parents who had neglected to send their children to school, posted nearly 4,000, and had to summon 356 before a magistrate. These commissioners themselves are composed of men too busy, or too ignorant and sympathetic with negligent parents to meet often enough and act with needed energy, and have in many sections practically ceased to exist. A good teacher is the best stimulus to attendance.

Financial Legislation. Expenses are special, as for buildings, furniture and equipment, and stated, as salaries, light, heat, etc. In principle the communes pay all special expenses, save for normal schools, which fall to the department, but may be aided by loans from the state. These had been enormous till 1885, when they were placed on a new basis. Now only communes taxed below a certain value can receive any subvention, which when accorded, may vary between the limits of eighty and fifteen per cent. of the value of the property, and is given in the form of annuities, repayable in from thirty to forty years. The stated expenses, including keeping buildings in repair, are obligatory upon the locality. School money is raised, besides donations and legacies, by a variable per cent. (the maximum of which has been differently fixed by recent laws) of the entire tax paid by the commune. This is one of the new problems caused by making education free, that is yet in a very unsatisfactory state, and further legislation is impending.

Funds The commune (or town), the department, and the state, have each an educational budget, and these together make the funds devoted to primary education. The ordinary or current expenses of this part of the educational service of France for 1887, *e. g.* were in total 121,545,868 francs. Of this donations and legacies yielded 561,950 ; previous levies, four special centemes, supplemented by a special per cent. appropriation, yielded 39,481,506, making 40,043,459 in all by the commune. The state set apart a departmental four centemes amounting to 4,828,755, and added 76,679,659 in subventions, making altogether the above total, which by special expenses was that year swelled to a grand total of 172,900,352 francs. Communes often aided till they were able to own their school-houses. The state can aid in building only when the commune has already devoted to the purpose one fifth of its ordinary resources. In 1887 nearly eight million francs were spent for primary school buildings. School fees in 1881, the last year they were paid, amounted to but little over nine million francs.

Administration and Inspection. At the head of the entire system of education is the *Minister of Public Instruction and Fine Arts.* This is one of the most important positions in the French Cabinet. Next under him, and less subject to the changes of parties are *three directors* of Superior, Secondary and of Primary education respectively. At the head of primary education is M. Buisson, whose admirable report to his government on the American System of Education as represented at the Exposition at New Orleans, is in most respects the best general picture of our system in existence, and who more than any other man has directed the recent transformations of the school system of his country. The minister appoints or names to the president of the Republic inspectors, instructors of normal and heads of all other schools, exercises judicial functions in disputed school questions, executes decrees and laws, issues orders. circulars and instructions himself, and by edicts can annul or modify the acts of his subordinates. He is aided by a *Consultative Committee* in three section, one for each educational grade. Its members in the primary section are usually called to act on age exceptions in examinations, the equivalence of foreign diplomas to those in France, etc. In the superior council are six members elected au scrutin de liste by the inspectors of primary education, directors of normal schools, etc. The council itself, only consultative so far as administration goes, save in disputed and disciplinary matters, is a veritable tribunal of appeal. The *rector of each academy* who is named by the minister has the primary normal schools in his department especially under his charge. He watches other public schools through the academic inspector, proposes improvements to the minister, approves a list of text-books, and names the examiners for the prizes and stipends awarded to the upper primary schools, and also the committees of patronage. Most other examining boards are made up from his nominations. The rector of the department university finally nominates teachers of whatever rank in public or private schools who show remarkable aptitude for decoration with the much coveted title of officer of the academy, if of higher schools, or of officers of public instruction, if of lower schools. For these rewards of merit the prefect also acts as well as for medals and honorable mention. The department prefect also confers the national stipends in primary schools, but on the basis of examinations. The chief of primary education in each of the seventeen departments of France, is *the academïc inspector.* The creation or suppression of schools, and their material and personal installation are in his hands subject only to the approval now of prefect and now of rector. In 1886, and again in 1887, the chief inspector's power was enlarged. He inflicts penalties, even that of revocation of the right to teach, and of controlling the opening of private schools. Under him are the *primary inspectors*, usually one at least for each arrondisement, and are of three ranks as to pay, but most all have passed the same examination especially for them. They can advise but not decide. They co-operate in cantonal teacher's meetings, may attend *ex-officio* all local commissions which have for their sole purpose to enforce attendance, preside at examinations for the certificate of primary studies, and advise on appointments, promotions, buildings, adult classes, savings banks, etc., etc. The *department council* is composed since 1886 of the prefect who presides, the academic inspector, four general councillors elected by their collegues, the two directors of the normal schools, four school representatives, two primary inspectors, and for special purposes, two representatives from private schools, lay and church. Members are chosen for three years and are re-eligible. It notices the observance of programes, medical inspection and reports to the academic inspectors on all matters administrative, pedagogic or disciplinary. This council was profoundly reconstructed by the law of 1880 to give greater influence to university functionaries.

The law of 1886 lodges the power of inspection in *six inspectors general.* They visit primary and most especially normal schools and make special reports to the minister.

Each inspector general constitutes examination juries for higher school degrees. Besides there are inspectors of singing and music, of manual labor, modern languages and design in normal schools. There are four *general inspectors of maternal schools*, who must be at least thirty-five and named by the minister; *medical inspectors* both communal and departmental; lady *inspectors for girls schools* public or private, who are named by the minister and serve gratuitously and rather superficially; *cantonal delegates* named for three years by the department council to inspect schools in each canton. Each member having entrance only to the schools assigned him, and this inspection extending to building, health, bearing of pupils, till in 1887 they were given power to inspect teaching as well; the *mayor*, who is not only *ex-officio* president of the city school commission, but also of an improvement committee which functionates wherever there is a school of either manual apprenticeship or a superior professional school. For private schools the inspection is far less thorough than for public schools. For all others than the above admissions into a public school is strictly forbidden, save with special permission. Prefects may enter schools in their own domain, but cannot inspect. Only those members of the department council especially appointed for the purpose can enter. Priests and clergymen are expressly forbidden to enter by the law of March 28, 1882.

TRAINING OF TEACHERS IN FRANCE.

Organization and Administration of Normal Schools.

Before the decree of July, 1881, admitting semi-pensioners and externs all normal pupils were interns. Not only board and lodging, but laundry, care of rooms, and medical attendance are free. The number of meals per day, courses per meal, the amount of bread, meat, wine and beer, wood and lights, allowance for furniture, etc., per student remain as fixed by the law of 1855. Intern teachers as well as the director almoner and head master can eat at the commons table. By the decree of 1881, the director of a normal school for males receives, besides free pensions, 5,000 francs per year, and the lowest teacher 2,000. The many outside teachers are paid from 100 to 300 francs annually per week per hour of service. A local committee of five, nominated by the rector and appointed by the minister, makes weekly visits, receives the annual report of the rector, prepares the budget and advises on all matters. In the same way a professor is appointed economist under bonds to handle the funds of the school and keep its books. The business forms, inventories, accounts of furniture, are often prescribed by the state, and in some particulars with great detail. In 1888 the head of each school reported the history and statistics of his or her school. These are now published in abstract by departments grouped under the academies which they compose, and altogether constitute a suggestive magazine of facts. The garden plays a prominent part in the rules, recreations and in the culinary administration of these schools.

Lower Normal Schools.

After the "seminary for lay teachers," opened by La Salle in 1684, and the Ecole Normale at Paris in 1795, which drew 1400 students from all France, and was closed by imperial decree in three months, the first normal school in France was founded by local authorities at Strassburg in 1810. This remained the best, long after Alsace, also incited no doubt in part at least by German proximity, had done the same. Other departments followed. Between 1830 and '32, when the state took direction of the matter, fifteen were founded, making thirty-six in all at the end of that year. The course was usually two years. Practice schools were rare, but students taught classes of their colleagues, organized adult courses, or taught in schools of the village. All method teaching was, however, by apprenticeship. There was no ethics, psychology or pedagogy proper. As everywhere, long and bitter discussions followed these attempts to determine the limits and history of education. The academy of moral and political sciences offered a prize for the best essay on the improvement of these schools in 1838, and gave it to one of their severest critics. Minister Guizot could not stem the tide and the law of 1850 humiliated and almost destroyed normal schools. Under the ministry of Duray (1863–7) normal schools gradually developed.

The fundamental law of 1879 organized normal schools on their present basis. In 1889 there were eighty-two normal schools for the training of male, and eighty-nine for the training of female teachers. All are laicized. Two new certificates, one of aptitude for professorship and one of aptitude for directorship of these institutions were created, and two superior normal schools, one for men, at Saint Cloud, and one at Fontenay-aux-Roses, to train teachers for the lower normal schools and for these certificates were established in 1880. Most of these lower normal schools are now installed in new and enlarged buildings, which leave little to be desired in material efficiency. In 1889 there were in all 4,754 male, and 3,647 female students, most of whom reside in the school. Nearly all have practice schools, and most maternal schools also connected with them.

Superior Normal Schools, Fontenay-aux Roses.

This superior normal school, to train the female teachers of the eighty-nine lower normal schools, was opened in November, 1880. The studies were ordered by an inspector general, and by a high commission. This was an important event, not only in the history of normal education in France, but it was the first time the state had supplied all the resources, and the university had combined its three grades for the higher education of girls. It was a new situation, and brought special responsibility, and had national significance, and excited joyous hope and ardor. About forty-five students here seems about sufficient to furnish candidates for all vacancies in this branch of the educational service. Candidates must be between nineteen and twenty-five; must have the attainment of bachelorship. On an average about one in five is admitted. There are two departments, science and letters, with literature, psychology, morals, pedagogy, modern languages and vocal music common to both. The course is three years, but just now is reduced to two, to provide teachers for new lower normal schools. The annual examinations for promotions are made by the regular teachers, but the final examination, which gives the title of professor, is public, is open to all comers, and is conducted by examiners from a distance, named each year by the minister. For the oral part of this examination the candidate must go to Paris. Nearly all live in the building, and everything, even books and traveling expenses are free, and each is paid annually about 250 francs, but she must pledge at least ten years service in normal work. Each pupil has her room. The liberty here is great, but it is not forgotten that the greater the freedom the more rigid the government must be in matters where control is needed. All night work is forbidden, and all the time after the evening meal is spent in dancing, conversation, etc. The resident staff consists of a director and four repetitorial professors. The teaching is also largely given by professors from the lycées, Sorbonne, museums, etc., who come once a year, or once a week, a month, etc., and whose work is mosaiced together with that of the staff into an admirable course. The lessons are always an hour and a half, and these but one or two per day with practical work. The *répétitrices* teach the pupils how to study and get their lessons with them, and after the classes, complete, review, apply and explain it—in short, give unity to the work of the many instructors who give but a part of their time to the work, and bring home collective work to individuals. There are quarter and half hour exercises in mutual teaching, led by a pupil named in advance, and followed by criticism. The same lesson must then be "transposed" or given to a class of children to note the change in form. Subjects in history, French, psychology, morals, mathematics, etc., are given out from one to three weeks in advance, perhaps to groups of from two to four students; and then from one to three hours are fixed within which an essay must be written upon it. Again, a literary, scientific, or moral point is developed, or a mock case of discipline, a class on which each must write a fixed number of lines. By these methods and by translation, etc., the drill in rapid, precise, orderly expression, develops their resources in languages without attempting to make authors. Daily choral song is said to voice the best common spirit of the school, and to be a means of manifest moral education. Two volumes of admirable vocal music have lately appeared, mostly chorals, adopted here and widely used elsewhere, chosen by authors said to have exhausted the field of historic and contemporary song.

Rarely has it been shown what could be done in bettering the manners, habits and language of girls at this plastic age, in two years. One says their entire apparatus of activity is made over by furnishing them with keys to methods and by a new *esprit du corps* inculcated incessently during almost every waking hour, and with every possible application and detail. The devotion of sisters of charity and daughters of the church must be transfused by the enlightenment of science. State visits are made to the schools of Paris under the escort of the state inspector, to be afterwards reported on. In the hour-plan, which requires rising at six and retiring at nine throughout the year, comparatively little time is left for recreation, and the only exercise that falls every day is the morning half-hour conference.

Saint-Cloud.

After a tentative three months course in 1880, a course of one year was opened in March 1882 in a wing of the palace at Saint-Cloud. Admission was made competative and open to all, although at first designed chiefly for the masters of the lower normal schools. Applicants must be between the ages of 21 and 25, unmarried, and must make a decennial contract for future service, at least two years of which must be given to public schools, and must have attained a superior brevet, either a bacculaureate in letters or science, or a brevet of capacity for special secondary education. On graduating they receive the certificate of appitude for a professorship and are at the disposition of the government. The course in science is relatively stronger than that in letters, and there are more externs than in the corresponding training school for women at Fontenay-aux-Roses. The work is more directly with the professors and repetiteurs are unnecessary. There is an excellent reading and billiard room. The primary school studies are the basis of work. Excursions to institutions of various kinds and also for botanical, geological and other studies are frequent and are commonly on Sunday. Many notable authors are invited to hold a single conference with the school. Manual training at the forge, carpenters work, modeling, etc., is required for students of science and permitted for others. German, English, and other foreign students are not infrequent among the externs. All must rise at five and retire at nine.

The Ecole Normale.

After the expulsion of the Jesuits from France a lay novitiate for professors was needed to replace them. Between 1762 and 1770 a plan was executed by which the pensioners formerly scattered among small colleges were brought together at the college of Louis-le-Grand. After completing their course in the provincial colleges twelve were brought here by pensions to follow one of three courses, each for three years, ending in a higher degree, and to devote themselves later to higher instruction. The Convention in 1794 established the normal school of Paris with a three months course for teachers who were, in the language of the decree "to put in execution a plan which aims at the regeneration of the training of man." Of the later history of these pedagogic pépinières M. Dupuy in his admirable history seems to have found no record. In 1808 the Empire established the normal school on nearly its present basis. Three hundred young men could reside in the institution. The first year they must pass the baccalaureate examination, the second that of licentiate, and the best might remain a third year for the doctorate. Common meals and frequent religious exercises were enforced. It was thus a natural annex and complement of the Faculties, forming their professors. The Restoration in 1814 gave all who attained a licentiate the title of brevet aggregé and made many other changes. In 1826 a preparatory school was instituted. This checkered history shows a persistent devotion to science that is often touching. It has never had at one time the 300 students at first provided for, and often far less, and since 1870 has been changed less than most other educational institutions in France.

Now the minister of public instruction and fine arts determines at the beginning of the year in view of prospective needs and demands how many shall be received. The best are selected by competitive examinations, and must be between 18 and 24 on admission. The course is three years. All board and room in the institution and all is at the cost of the state which they must promise to serve by teaching ten years, in return from which they are exempt from military duty. If they wish to become titular professors in a Lycée they must reach the grade of aggregé, and if they are to become professors in the Faculties they must qualify for the doctors examination. Till the establishment of the École des Hautes Étude in 1867 this was about the only institution in France where select graduates of the Lycées could go to study pure science. It has been an asylum where the traditions of good work for its own sake, which seems the motto of its present excellent director, M. G. Perrot, have been kept alive in long degenerate periods. Conferences—each an hour and a half long—and practice rather than stated lectures is the method. Only the third year can the students go out for any additional work they wish in the Sorbonne and the College of France, etc. Its library, composed entirely for its own work, now numbers some 60,000 volumes. A volume of over 400 pages containing a list of all graduates in both its departments of sciences and letters was publjshed in 1884. It has trained many of the most distinguished men in France. It is a unique institution esssentially without a parallel in the world with almost nothing of technical pedagogy in its course but an apprentice school of the most advanced methods of scientific study and research.

EXAMINATIONS OF TEACHERS IN FRANCE.

The law of 1881 requires of every teacher whatever a brevet of capacity. It also created special titles for professors in normal schools both high and low. These and inspectors constitute the personnel of primary education. Of M. Jost's interesting history of examination for teachers since 1568 it need only be said here that it shows us that France has had an experience so long and varied that it should at least commend the present well matured plan to careful consideration. The requirements of the present law of 1887 may be thus summarized. To be admitted to examination for the elementary brevet the candidate must be 16, and for the superior brevet 18. Examinations are held in each department in July and October, by a board of seven examiners, two of whom must be inspectors and most of the rest heads of public or private schools. The lower examination is as follows: I. A page is read, then slowly dictated, then read again, and after ten minutes passed in for orthography; II. Writing in three hands, cursive, round and *bâtarde*, ¾ hour; III. French composition, letters or explaining a proverb or maxim, 2 hours; IV. Arithmetic and problems comprising whole numbers, surface and solid measurement, 2 hours. This comprises the tests of the first series. The second consists of; I. Drawing a sketch of some object, showing plan section and elevation, 1½ hours; II. A gymnastic exercise from the programme of the primary school, 10 minutes. Candidates should also draw a familiar object, 1 hour, and women must do a piece of needlework, 1 hour. The third oral series comprises; 1. From a pre-announced set of selections one is made the basis of questions on grammar construction, connection of ideas, meaning of words, etc. 2. Questions in Arithmetic and the metric system. 3. Questions on elementary natural history, civic instruction, geography of France, with black-board drawing. 4. Questions and exercises on the musical scale. 5. Elements of natural and physical science, and agricultural education. To each of these last five not more than ten minutes can be given. No one who has not obtained half the maximal mark in the previous can be admitted to examination in the succeeding series, and zero for any item is failure.

Candidates for the second brevet must have already obtained the first, and all their examination must be in the same session but not in the same day. First series:—I. A composition covering two questions, one in arithmetic and applied geometry, and the other in physical or natural sciences and their application to hygiene, industry, agriculture or horticulture, 4 hours; II. French composition, literary or moral, 2 hours; III. Drawing from a model in relief, 3 hours; IV. Composition of 12 lines in a foreign modern language on a simple theme with use of lexicon, 1½ hours. The mattter of the second series is in seven groups, I. Questions on morals and education; II. French language, explaining a passage from one or more works of 23 French authors selected by the minister in advance every three years; III. Important facts and names in French history since 1453; IV. Geography of France drawn on board, and general geography; V. Arithmetic appplied to practical book-keeping, and (for aspirants only) elementary ideas of algebraic calculus and geometry, surveying and leveling; VI. Physic, chemistry and natural history; VII. Translation *ad aperturam librum* of 20 lines from either English, Italian, Spanish or Arabic at the choice of the candidate. Not more than fifteen minutes should be given to each of these groups, and the mark of the two series each on a scale of 20 must reach 30, and one zero is a failure.

In 1888, 10,619 females, and 4,012 males passed the elementary examination, and 2,144 females and 1,346 males the superior examination. In each of these four classes very nearly half of those who attempted passed. The lower brevet is based on the course of the superior primary school, the higher on the programs of the normal schools. Pedagogic methods and Latin were subjects for these examinations till 1887 when they were dropped. There is now much objection to the modern language and requirements, and it is felt that too great uniformity in different parts of France still is required.

Besides the two brevets another examination for a certificate of pedagogic aptitude was instituted in 1881 after various tentatives dating back to 1816. In place of former examinations in methods both theoretical and practical as a part of the brevet examination it was now felt that pedagogics was practical. Thus the new examination could be taken only after two years of teaching.* In 1884 the number who received this certificate in France was 622. It consists of a written composition on some phase of teaching; an half hour oral correction of tasks, and a lesson given on any one of seven subjects chosen by lot. A practical "sprung" test three hours in the teachers own school before the local inspectiors is now enforced. All who wish to be directors must take this new examination. In 1888, 2,581 males and 1,715 females passed all and 1,781 males and 1,083 females passed a part of these requirements out of nearly 14,000 candidates in all.

The certificate of aptitude for a professorate in normal and superior primary schools was instituted on the basis of an examination in 1880 and given a legal existance in 1886. Before this teachers in lower normal schools need pass no examination. They had done good work before but were now permitted on the basis of a superior brevet or a bacculaureate to attest their ability and attainment by submitting to written practical and oral tests. In 1888, 26 out of 129 male applicants and 32 out of 104 female applicants passed in the section of letters, and 21 out of 183 male and 24 out of 92 female applicants in the section of science. This does not include a far smaller number of partial examinations. In all the examinations since 1880 the per cent. of successful candidates has varied between the extremes of six and forty-two. Regular candidates must be 21 years of age, but those aged 30 and who had taught ten yeas at least at the date of the law might be exempt from part of the examination which all other teachers must pass within five years. The subjects of the full written test, which lasts four conservative days and no one of which is less than four hours, are numerous and include psychology and morals, a foreign modern language, literature and grammar, history and geography. A composition on each subject is the usual form of the written exercise. The practical tests are an half hour lesson on a subject selected by lot, the explanation of a passage in litterature, the correction of a written exercise, a demonstration of a scientific subject. These exercises have greatly increased the efficiency or normal schools.

---

* This is consonant with the practice elsewhere. In England an examination of proficiency in the subjects is not sufficient, but to obtain a definitive diploma the candidate teacher must receive two favorable reports from an inspector with half a year's interval between them. In Austria after a normal school certificate of maturity and at least two years of provisional service the teacher must pass a second practical examination before being definitely installed in his or her work. Prussia and other German states have similar provisions.

Special diplomas are given for singing, drawing, living languages, military exercises, gymnastics and manual training. Normal teachers who have passed the general examination above may pass any of these and are paid a small fixed additional salary for teaching these special subjects. Music has been obligatory since 1887. Any one aged eighteen years may be examined in music.

The 87,000 primary schools, and 144,000 teachers in primary schools are supervised by inspectors created first in 1835, and examined since 1845. By the new law, which went into effect September 1, 1890, candidates must be twenty-five years of age, and must have been a normal teacher or a primary director for at least five years. The candidate for inspector in a modern language must have spent at least a year abroad. Candidates for directorships of normal schools must submit to the same tests. Among these are two compositions of five hours each, one on a subject of pedagogy and one on school administration and an actual inspection of a primary, a superior, and a normal school, with a written report, an oral exposition of a passage chosen by lot from works of ten authors, prescribed beforehand by the minister. Between 1880 and 1888, 120 females, out of 228 examined, and 441 out of 1318 examined male candidates had been admitted. Of these only 84 females and 233 males were judged apt. During these recent years teachers in normal schools have increased and other instructors have diminished, till now the former furnish the chief recruits for the rank of inspectors. This is obviously a grave defect, and several remedies have been proposed, but none yet adopted.

In 1881 a new certificate of aptitude for the inspection of maternal schools was instituted. Candidates must be twenty-five years old; must have the superior brevet, and the certificate of pedagogic aptitude. Hygiene forms a prominent part of their examination.

Appointment, Discipline and Pay. Teachers were appointed by the prefect by the law of 1850, and often from political considerations. Now he still appoints, but can only do so on the nomination of the academic inspector. All directors or masters and higher special teachers are appointed by the minister. The appointing power may also change the place of a teacher's activity. The latter must engage in no other remunerative function. Penalties for teachers are: 1, private reprimand by the academic inspector; 2, censure by the same, with approval of the department council, which fact may be published in the Bulletin; 3, revocation. This is by the minister on advice, and is provisional and subject to appeal. 4, interdiction. This not only effaces the name from the list of public teachers, like 3, but takes away the right to teach even in private schools, and appeal is not suspensive. In maternal schools the lowest salary is fixed by law, and ranges from 600 to 900 francs. In the lower primary schools it is from 600 to 1200; in the upper primaries, from 1200 to 2800; and in the normal, from 1400 to 5,000 francs. In the the lower schools this minimum is increased yearly for a time. Passing the higher examination, a high stand on the list of merit, the obtaining of a medal, etc., increase the pay. In lower schools teachers must be lodged by the commune. The total income of most teachers is thus annually made up of many variables, most of which depend on merit. Pay is in twelve equal monthly installments. The pay of upper primary teachers varies somewhat with the number of pupils, and normal teachers not residing in the building receive more. Special and professional teachers are paid so much a year per weekly hour. Teachers who have reached the age of 55, after twenty-five years of service, receive 500 or 600 francs per year as pension, can ride at half-fare on all state railroads, etc. Honorable mention and medals of bronze and of silver are given. Teachers on the retired list may be named honorary instructors by the minister. On entering the normal school, where all is free, intending teachers must promise to teach ten years at least, and since 1872 have been exempt from military services if the pledge was not broken.

PEDAGOGIC CONFERENCES.

Cantonal conferences were established by Guizot in 1833. under the curious name of *cours de perfectionment.* Teachers were to meet once in two weeks in summer and once in four weeks in winter for mutual instruction and confraternity. The law prescribed that the rector of the local academy should name the president. Each member might be asked to rise and give a brief statement of what he had read since the last meeting. These conferences were not obligatory and soon languished. There was little pedagogical science or literature, and material for discussion was scant, and meetings were too frequent. The modern conference rests on the Ministerial circular of 1878 and the order of 1880, making them obligatory in every department. The attitude of incessent research after betterment is indispensible, for every teacher who would avoid routine and improve in his or her profession. Now all must go, but each conference regulates its own work freely. Usually they are cantonal and twice a year. Even in practice work at conferences, teachers of both sexes meet together. The academic inspector, under the authority of the rector, fixes the number of meetings, groups, cantons, makes out the list of topics to be considered, and is responsible for interest in the meetings. He may relieve individuals from the obligation to attend in departments where their extra expenses are not provided for. Now these meetings rob the inspectors of both time and money. Conferences sustain interest and enthusiasm in the midst of the indifference that surrounds the teacher. It is hard for the teacher to realize the fact if his school is slowly declining, still more so to apply the remedy; this the inspector exists to do. Each department has its Bulletin or Moniteur containing all official acts, and all the inspector's instructions to his personnel. But these communications cannot be confidential or individual enough. Certain memoirs are required in some places of masters of schools. Some departments require but one a year, some permit several to unite in producing one essay, sometimes it is optional. Against this requirement it is said that sometimes a good teacher like a good mother can do but not talk or write. These memoirs the inspector must read and either annotate and return, or make extracts as the basis of his own discussions, or grade and classify them by merit. The best ones may be read at conferences. Often a canton or entire department has the same subject, thus general attention may be called to a reform. The same subject to several different cantons is often the best basis of comparing the cantons, and may even be a basis of rivalry. The importance of subjects varies greatly with local needs. At these meetings a resumé at least of all memoirs is read, and an account of all proceedings and all resolutions which must be prepared in advance, are deposited in the pedagogic museum in Paris, and perhaps printed in part in its Revue. Discussion only enforces previous opinions and is not allowed. Teachers are now well provided with general ideas on pedagogy. Practical questions, often of detail, have more interest, and later those tending to educate the teachers in his subject rather than pedagogy have become most attractive of all. Now that the programs are applied, personal study by the teachers is now the order of the day. Visits to school to see masters teach their own pupils in their own rooms and banquets or "fraternal agapai" between the sessions are lauded new features. In general, pedagogic conferences measure and reflect the degree of public interest in popular instruction, and progress has followed their development.

PEDAGOGICAL CONGRESSES.

A spirit of initiative and a zest for discussion, having been awakened by the local conferences, the first national congress was held in 1878 and a long list of more general questions was submitted by the government. Not only primary but higher grades of education were represented; public interest was aroused, and an ideal of manual training as establishing an equilibrium between physical and mental faculties was awakened. There was less discipline on the part of the government than in the local assemblies, and less effort to impress its doctrines and spirit. It appointed M. Gréard to preside, direct and inspire debate, and put his talent and experience at the service of the congress held at the Sorbonne in 1880, '81, and '83. The first and third were for heads of normal schools and one primary inspector from each department. The second was for teachers chosen by double elections, *i. e.* members elected by cantons voted for delegates from the departments. Two to four questions were proposed and were made the basis of cantonal election-agitation which the constituents of the delegates had studied, and which generally had already been discussed in the local conference. Thus sifted through successive discussions these questions were resuméd in the form of final resolutions. Each delegate keeps a book of reforms and wishes and as a result of these meetings these note books become often records of the rectification of local and personal preconceptions. The resume of the work of one of these congresses summarized by M. Gréard may make a volume of value,—a product of joint labor of chiefs and simple soldiers working out problems of mental and moral needs. If these congresses seem official, association with the minister is mutually helpful, and has contributed much to ensure and guide action in parliament or the Superior Council.

Havre has become one of the most progressive and best governed cities in France. It has a vigorous *société de l'enseignment pas l'aspect.* It had sent young teachers abroad to report on contemporary improvements in education. In 1885 it sent out an appeal for an international congress to consider four subjects: the use of pedagogic meetings, normal training, teachers pay and normal schools. Sections were to meet first and then the general congress. The meeting was an entire success, but the government did not favor a permanent organization, or any society or federation of teachers. The government has progressed much faster than the people, and the professors far faster than the teachers; thus the leadership of the former in reforms is needful and salutary. In 1886, the philomathic society at Bordeaux conducted an international congress of technical and commercial education, the printed proceedings of which have much value. A journal, *Le Congrés d'Instituteurs*, founded in 1885, meanwhile made active propaganda in favor of a permanent committee. This and the discussions of the Paris congress in 1887, issued in resolutions that department societies be organized by delegates present at Paris in each department, and that these unite to form *l'Union Amicale des Instituteurs de France*, to organize and make statutes for which a committee of twenty-four was named. The minister opposed this "autonomous professional syndicate," as tending to sedition. Automony in one member of a legal hierarchy of office-holders of the state, he said, would mean anarchy. It savored of mutiny against himself. Other alliances as of inspectors, primary teachers, etc., would follow and thus make a program of disorganization which the government must oppose. This would not be like mutual help societies, associations of alumni, La Ligue, etc. Teachers should not, like working men, combine under other leaders than the government, especially where the latter gives them permanent employment and pensions them in old age. Whatever relaxes the obligations of teachers to the state is sure to weaken that of the State to them. This vigorous protest, and the preparation for the international congress at the exposition in 1889, has now somewhat diverted attention from this question. This congress was divided, not by grade or subject matter of instruction, into five sections: 1. Pedagogy; 2. Professional interests; 3. Economy and prudence. 4. Organization of congresses; 5 Free education. This was left more to the will of the majority of teachers, and its discussions are the most vast, superficial and worthless of any French congress.

SCHOOL LIBRARIES.

In 1860, measures were taken to establish libraries in primary schools, to be kept by the instructors in the school room in a case of approved fashion, for loaning to parents. At first the selection of these books was supervised by the academic inspectors, but in 1868, this work had so increased that it was intrusted to a permanent committee. This catalogue of carefully selected and approved books had grown in 1887 to 2,594 books on eleven subjects. In 1888 there were in all France 36,326 of these libraries, containing over four million volumes, and having made in the rural districts nearly 46 million loans. There are but 36,121 communes, but large towns have several, and many small country schools still lack there libraries. The total cost has been over eleven million francs, of which the state has supplied but about one-third, the locality the rest. This does not include gifts of books. As the business of bookselling is mainly in the hands of the publishers, and therefore much time and labor would be involved in the purchase by the local libraries of approved books, the administration provides all the books of the catalogue ordered by the communes. These libraries have been a stimulus to authors for whom they make a large market. They contain text-books, gifts from the minister, the prefect, the commune and individuals. Each year the three instructors who have best administered this library, as shown in the annual report, are rewarded by the minister.

La Libraire Scolaire.

In 1817, the commissioners of public instruction selected twenty-nine text-books in seven leading subjects taught in primary schools in France. In 1888, 1,531 text-books in fifteen primary subjects were sanctioned. Paul Delalain, the well known scholastic publisher, protests against too detailed programs as interfering with needful liberty of editors and authors, and against too frequent changes of the school curriculum. A law profoundly recasting the course of study like that of March 28, 1882, involves new text-books and great changes in old plates. Laws compelling attendance have greatly aided publishers.

Pedagogic Libraries.

Libraries for teachers were sanctioned in 1836, but interdicted in 1849. They began to be organized again in 1875, and in 1879 a ministerial order constituted a commission to consider the organization of these libraries. In 1889, this committee consisted of twenty-four prominent educators and the state aid had grown to 30,000 francs. The official catalogue divides these libraries into three parts. I, books on doctrine, principles, philosophy, etc. II, books on practice and application, method in detail, etc. III, works in laws and history. In 1888, there were in all France, 2,683 of these libraries, containing 895,367 volumes. In many places a room for weekly reunions is opened, and the library is kept in the closest touch with the pedagogic conferences. The utility of these libraries is the very highest, and they have won a very strong hold on the teachers, but all are not yet agreed as to the best method of extending them. Some think they should be departmental, and some cantonal, and thus of course smaller, but nearer to teachers. Some advocate free postage for the transfer of these books as in Belgium. Some hold that a few good books covering all the ground required by any examination in pedagogy, in preparation for which these libraries are much used, is sufficient, and some advocate a less number of larger collections of books. The number of loans of subscribers is not now increasing. All admit that these libraries have greatly improved instruction.

School expositions originated with that of the universal exposition of 1867. The same year M. Duruy in a circular letter to the prefects, suggested annual departmental expositions, and before 1870 they were held in nearly half the departments. After the war they were soon resumed. They are often attached to agricultural fairs, industrial expositions, occasions like the inauguration of the Jouffroy statue, local art exhibitions, gymnastic congresses, meetings of geographic and other scientific meetings, etc. Between 1870 and 1889, 129 were held, most frequently between 1882 and 1884. Some are special, as of school-work in geography, drawing, needlework, etc. only. It has been said against them that they cannot represent the real life of schools. That preparation for them causes excitement, diversion, jealousy and deception, But on the other hand they break up issolation between schools, and between families and schools. An herbarium of dried plants is not a living garden, but it offers its own peculiar facilities. Despite the perturbation and perhaps disorientation the indelicacy, and even charlitanry often charged expositions may be made a touchstone of comparative merit, and have not only pedagogic, but even scientific value. The daily work of an entire class, and not the best work of the best members should be shown. Writing, drawing and other work should be sampled for the same pupils for a series of years, as a sort of school biography automatically measured. Besides the work of pupils, curricula, ground plans, the pedagogic work and progress of teachers, school furniture and illustrative apparatus, buildings, heating, ventilating, lighting system, and administrative documents of all sorts may each be made the subject of a special exposition. It is now held that once in four or five years is often enough for a general local exposition, and they are now becoming less frequent but better.

FRENCH PEDAGOGICAL MUSEUMS.

To become scientific, pedagogy must be studied comparatively. This necessitates collections of text books in each subject, reports, laws, etc., of each nation, school furniture, supplies, etc. In England the idea was first inspired by the exposition of 1851. South Kensington now has 40,000 volumes on education of all orders. Upper Canada followed in 1856 with a collection at once agriculturial, industrial and artistic. St. Petersburg founded one in 1864 which not only exhibits but examines, selects and aids in the economic manufacture of the best books and illustrative apparatus. Washington followed in 1867 with collections and studies chiefly statistical. Other important museums were established as follows:—Rome, 1874; Zurich, 1875; Amsterdam, 1876, (founded by a society of masters of schools); Paris, 1879; Berne, 1879; Bruxelles, 1880, (for all grades); Lisbon, 1882; Madrid, 1884, (loans books, models, etc., and gives two prizes for competitive examinations in: 1, pedagogic studies; 2, improvements of school material); Tokio, 1877, (which buys and tests instruments for the schools in physics and chemistry, and spends twenty thousand dollars per year); Melbourne, 1890.

The library of the French museum is adapted to aid teachers to prepare for all primary examinations, and also for scholars who wish material to write upon these subjects. One room is set apart for a loan library, one to periodicals, one for French laws and administration, one for foreign documents, one to copy books and pupils' work, one for recreative reading and one for duplicates. A large room is set apart for geography, for natural history, physics and chemistry, model school laboratories and museums have been made, and three rooms are for an upper primary school room, needle work and a maternal school respectively. In all, the museum has thirty rooms. It is open twice a week to the public, and every day to those who have a working card, of which in 1888, 280 were given out. Entire normal schools from the provinces visit it. A director, a librarian, a catalogue an editor and a curator are constantly employed, and the annual budget is 40,000 francs. A council of control of twenty members presided over by M. Gréard meets every three months. About 50,000 books, pamphlets and manuscripts, including 670 rare reserved works, are arranged with wonderful convenience, and catalogued in 103 little subject catalogues, the same work being often entered five or six times. The museum contains between five and six thousand instruments, models, etc.

It is not a simple conservatory, but a centre of action and impulsion. It has created scientific education in primary normal schools. This was done by a catalogue naming series of objects in thirteen different branches of science. Two copies were sent to each school, in one of which the objects the school had or could get, were checked off, and it was returned to the museum, which supplied the defect. These objects were of course made the basis of the teaching programme, as this catalogue was a sort of compendium of physics, chemistry, natural history, etc. The change was great and very inexpensive. So too a typical herbarium, a type set of designs, and even fruits to be grown in normal school gardens have been elaborated. In the museum itself model manipulations and not lectures ex-cathedra are illustrated. In physics are 20, in chemistry 26 tables, each a chapter in the subject. Two pupils at a time work in turn at each of these tables perfectly and ideally equipped with gas-motor, apparatus, chemicals, etc., by the co-operation of professors of the higher institutions. A noble list of instructors from many institutions also prepare candidates for the certificate of pedagogic aptitude in literature and French history, geography and philosophy by conferences designed to increase the candidate's knowledge, and at the same time to be models of exposition.

The museum is a centre of information and a source of direction for the lower schools of the entire country. Its organ to the *Revue Pédagogique*. This monthly publishes all important debates, laws, decrees, records of commission and often unofficial private papers of value, and keeps the plates so that on occasion of new committees, or debates a monograph on the subject can be brought out at once. Even the *Journal Officiel* strikes off and turns over to the museum all the forms it desires. These special publications (*Mémoires et documents scolaires du Musée Pédagogique*) fall under six classes: 1, legislative; 2, administrative and special orders and organic laws of institutions and grades; 3, modes and methods of instructing in different subjects; 4, historic; 5, calalogues; 6, miscellaneous. Over one hundred separate reprints have been issued besides the exposition monographs —making a very valuable pedagogic library.

Les Musée Scolaires. Montaigne, Rabelais, Fénelon and Rollin protested against the abuse of abstractions and advocated an education in things instead of words. Not counting collections of miscellaneous objects, nor special collections in which scientific completeness has been sought, but only those classified and labeled, and such as to make lessons in things the basis of all teaching, there were established in France, between the exposition of 1867, before which there were none, and that of 1878, 148 tolerably complete school museums, only ten of which were for girls, and all by the initiation of teachers. Owing to the great impulse of 1878, the lectures of Madame Pape-Carpenier, and the government favor, these increased at the average rate of about 1200 per year, till in 1889, there were 13,034 tolerably complete museums in primary and grammar schools, and many more partial museums consisting of collections of vegetables, minerals, etc. For the official tabnlation of these France is not divided into the administrative agricultural academic departments but into the ten regions of M. Levasseur. These methods of intuition have grown, partly because the government has not attempted to control them, till now Director Serrurier of Havre says that there is no school in France, however humble, that has not one or more collections as a basis for lessons in things. Sometimes these object-lessons are remarkably furnished. In linen, silk and cotton, *e. g.*, every process, from the raw material to the finished product, is shown on tiny apparatus as three lessons illustrating the transformation of matter by man. The total expense of all has been but 17,000 francs, and most of that has been bourne by the communes. These museums must never be bought, but collected with the aid of parents and citizens. Pupils should always have a few things in mind that are wanted. Things should be made clumsily though it be, rather, than had or got. These collections comprise, 1, *foods*, animal and vegetable, of many kinds, spices and common drugs, salt, etc. These are a basis for all sorts of information on the habits or anatomy of crabs, oysters, fish, game; on processes, as of butter, cheese, jelatine; on many kinds of plants, seeds, fruits, sugars, drinks, etc. 2, *Dress*, of animal and vegetable origin, colors, dyes, etc. This includes such things and processes as are suggested by silk, wool, cotton linen, hair and fur, rope, twine, cochenille, indigo, cocoa, rubber, soaps, analines, leather, etc. 3. *Dwellings*. Here come building woods of many kinds, stones, earth, metals, plaster and cement, oils, resins, many methods and materials of illumination, and heating. 4. A miscellaneous department, in which come such things as papers and printing, lead and plumbing, good and noxious plants and animals, birds, insects and reptiles, etc. All this makes the school and its work loved; makes thought and language clear and expression better, and if the objects do not do for each child what the apple did for Newton, they awaken the habit of investigation. The collections are classified, labeled, catalogued, and arranged in order in a case, which stands between a case for teachers' and one for scholars' books, whether with glass or opaque doors is disputed, must vary with the locality, and it must be made the basis of excursions to the field, store and factory. It must also fit the programme, and must never be complete or finished. The government has collected a mass of testimony from teachers which is strongly and with remarkable unanimity favorable. In addition to this the admirable "society of education by seeing" has a great variety of charts and designs and 5000 select magic lantern views which it loans to schools in other parts of France. A standard collection of objects and material and apparatus, mostly in chemistry and physics, has been made out and can be had for very moderate cost. Historical tables like those of Deyrolle, charts of anatomy and physiology like Regnards, tables of astronomy and geography like those of Fr. Hément, of natural history, like those of Ch. Delon are used. The apparatus of Laverne present still another side of this work.

In 1880, a distinguished committee was appointed to report on art education in schools. This work, summarized by Ch. Bigot, covered schoolhouse decoration, the distribution of casts, and the economic organization of little museums of works of art, to be made accessible to as many of the 60,000 schools and 6,000,000 school-chidren, of France as possible. No attempt was made to represent the history of art, but a few works, the merit of which was consecrated by universal admiration, were selected. The set of typical art objects for boys was somewhat more austre than for girls.

The certificate of elementary primary studies.

As early as 1854 certificates marking four degrees of merit in each subject were given to children leaving the primary school. These were coupons detached from stubs kept in the communal archives. This was intended as a weapon against illiteracy, but was either given to all or neglected. In 1867, Duruy addressed a recommendation to Rectors urging that it be given in new form only to pupils who passed a rigid examination, and be used as a recommendation to employers, etc. The mayor and curé who must attend the examinations were too sympathetic, and the certificates came to have no value because never withheld. This only a less local committee composed of teachers and strangers could reform. The department of Vosges of its own initiative first made this examination effective, arresting premature desertions from school in 1866. Teachers were cautioned not to neglect younger classes in preparing the little candidates, and every effort was made to avoid special preparation. This institution was recognized by a decree in 1880, and given a legal existence in 1882, by a law which admitted pupils of eleven to this examination, which is two years before the termination of the legal school age. This age seems to many too early, as the best pupils now leave school at eleven, and may be received into the superior primary school or into the complementary course. The character and standards of this examination vary in different departments and it is used by inspectors to give a local color to studies. The number of candidates is now so great that some now urge omitting the oral part. These examinations have been said to cultivate vanity and cram and undue stress upon subjects thought to be important. If passed by but few, emulation would be great, and some have urged that the names be published in order of merit, that prizes be offered for competition. This would of course be pernicious. The teachers' pride should be to present the most pupils and not the best for such a test. On the whole and in fact, however, the institution works well and stimulates both teacher and pupil. This modest diploma adorns the walls of many humble dwellings, and is commonly regarded as very recherché, as almost a title. In 1888 nearly 72,000 certificates were conferred in twenty departments.

Government prizes and stipends to pupils and teachers in lower schools.

Although education was made gratuitous in 1881 a special fund in the budget is devoted to the aid of individual pupils. This sum grew from 42,000 francs in 1878 when it was first established to 954,000 francs in 1889. Till 1887 the successful candidates were appointed directly by the minister. Since then, conformably to the policy of discentralization, the departmental prefect and inspector appoint. Success in written and oral examination is the first and chief basis of appointment; but service rendered to the state by the parent, poverty and the number of other children in the family are also considered. Children must be between the age of twelve and fifteen. Each stipend or *bourse* lasts three years, and varies from 100 to 500 francs per year, according as the student lives at home or boards in a family or a school, which must be in the same province. Most are placed in the so called superior primary public schools ; a few may be transferred to Lycées, or even to private schools. The latter are now permitted to send competitors for these stipends. Local committees of patronage, mostly of ladies, often organized to look to the social and personal well-being of individual students, especially when they leave school, care particularly for these select youths, who must report by detailed schedule in writing to the visiting inspector once a year. The schools to which they are sent are chosen with care, are honored and stimulated by the choice. Each school is required to maintain relations with every student after leaving, and by societies, by annually published catalogues, etc., to bind former students to each other and to the school, which is thus made the hearth of a large family who are all proud of a fellow member who achieves distinction. Between 1880 and 1889 over 18,000 children had been inscribed for these examinations, and 5,520 approved, of whom more than one fourth were girls. Of all these, twenty-one per cent. have entered or will enter the trades; twenty per cent. manufactures; sixteen per cent., mostly girls, return home; eleven per cent. agriculture; nine per cent. teachers; five per cent. government service, etc. It is too soon to judge of the merits of the system. By the method of selecting by successive eliminations far more are stimulated than receive the prizes.

In 1883 provision was made to send a few brevet pupil teachers to study at the normal school at Küssnacht, Switzerland, to better fit themselves to teach German. Out of 25 candidates for examination, six were sent on these travelling schollarships, and paid 100 francs per month by the state and their travelling expenses. After five months inspector Jost visited them and brought back so good a report that the minister planned an international exchange with neighboring governments of normal pupil teachers. Meanwhile others were sent to the Austrian normal school at Eger, to Dresden and to London. In 1885 eleven graduates of upper primary schools, and nine normal professors (six to Germany three to England) were sent out. In the same year the government appointed a commission of twelve persons headed by M. Bréal to look to these foreign scholarships, which involve some responsibility, as the upper primary graduates are only from 15 to 18 years of age. They must be placed in teachers families, they and the families watched, and must stay in the same place for two or three years. Finally pupils not intending to teach foreign languages are sent to foreign commercial schools for a year, after which they must if possible enter a foreign business house. The best of these foreign scholars often write valuable papers which have been often published in the Revue Pedagogique. Nearly 300 letters per year must be written to them by the inspector. They are often importuned to teach French in the foreign schools where they go but must neither do so nor speak it. They must not return to France for more than two weeks during their term of appointment and are advised after it is ended to go back often during vacations. After the normal professor returns he receives 100 francs per month till he finds a place. Several provinces and chambers of commerce have more lately sent pupils abroad competitively to study trade and manufacture, etc. In 1887, the state finally sanctioned and adopted these methods as a distinct part of the national system.

Caisses des Ecoles. By the law of 1867, the municipal council could, with the approval of the prefect, create a local fund to encourage and facilitate attendance, by means of reward to the diligent and aid to the poor. In 1882 these were made obligatory upon all communes, the government coming to the aid of the poorer ones. These expenses were so great that in 1884 the state ceased to furnish aid, and some communes allowed these funds or banks to lapse. Thus the number of them fell between 1883 and 1887 from 19,000 to less than 17,000. They are supported by gifts, legacies, fairs, city aid, etc. The teachers usually administer the fund gratuitously. It is under the control of the school commission.

Caisses D'épargne scolaires. Legal authorization is given to minors to open accounts in this national savings bank without the intervention of parents or guardians, that they may acquire habits of foresight and economy. These institutions are free and voluntary, and owe their popularity to the zeal of teachers. In 1887 there were 22,000 of these institutions, with a total sum, deposited sou by sou, of twelve million francs, The state postal and telegraph service offer special facilities to simplify the work. The method is as follows ; At a pre-appointed time each child is given a bulletin on which it records its name and pastes postage stamps for the purpose given by the teacher in return for its money. When the bulletin card is covered with stamps, which must equal at least one franc (the least deposit received), it is sent to the post and the pupil receives a book in which the first and all later deposits are entered.

Societies of Primary Education in France.

The oldest of these is the *Society for Elementary Instruction* founded by de Gérando, Say, F. Cuvier, and others, in 1815, who introduced the method of mutual instruction from England, and created five free schools at Paris. This society first introduced music and gymnastics into schools, and founded the Orphéon. The teaching of geography, national history, linear drawing, Sunday schools, regimental schools of the navy, manufactures and prisons, as well as popular, communal and pedagogic, were all introduced by it. Its monthly organ, Journal d'Education Populaire, founded in 1815, has now seventy-five volumes. In 1831 the government recognized it as "of public utility." This society has in all conferred over 30,000 rewards to teachers in maternal schools. Of these 10,000 were honorable mention only, and the rest were medals of four kinds and prizes, ten of which were 1000 francs each. Sixteen hundred publications by teachers have been rewarded. Three degrees of examination were instituted in Paris some years ago, in order by competitive prizes to keep the best children longer in school. In 1887 about seven thousand children took part.

The Protestant Society for the Encouragement of Primary Instruction was recognized in 1829 as of public utility. It too has its special agents who place its funds wherever they may be most useful. Guizot himself, the author of the famous law of 1833, was a member. It has founded and sustained 1,300 schools of its own, and established the first normal school, that for men at Courbevoie in 1846, and that for women at Boissy-Saint-Léger in 1855, and aided the model schools of Meuse (Isère), of Dieulefit (Drôme), and of Fenestrange (Meurthe). Since the supression of religous instruction in public schools, this society has employed a part of its funds in giving religious instruction on Thursday (a day left vacant for the purpose of religious training for children of such parents as wish it), of children of protestant parents.

The Polytechnic Association was founded in 1830, just after the revolution of July. Those from this school who had been in the war generously offered to teach their companions in arms. Auguste Comte, Contrat and Guibert were among the first volunteers. The association was saved from a fatal schism caused by St. Simonism, by Arago and others, and simultaneous courses were established in 1834 at the Sorbonne, St. Mary's cloister, and at the mayorality of Petïs-Péres. Now too a few Professors, not from the École Polytechnique—doctors, lawyers and graduates of the École centrale,—entered the association. In 1837 it began to decline; in 1848 it was split by an election quarrel; in 1854 its collection and its Halle aux Draps were burned out, but restored by Perdonnet It was recognized as of public utility in 1869. Since 1870 it has grown rapidly, and has many out-lying societies under its patronage. It now has twenty-one central courses at Paris, in some of which each evening upper primary instruction in science and letters are given, with occasional professional courses added, such as that for plumbers at their syndical chamber, for the ceramic school at rue Fromont, and at Levallois-Perret. Each section is directed by a delegate, who names the instructors, and all the delegates compose the council.

The Philotechnic Association split from the above in 1848 to give still more practical courses. Its object is to give free instruction to adults of both sexes, in what pertains to their vocations. It is composed of instructors who teach gratuitously, of honorary members, and of subscribing patrons of two classes, those paying 100 and those giving 1000 francs per year. It is controlled by a council elected for two years, of patrons and professors in equal numbers, with an executive secretary. Its courses in the various parts of Paris are adjusted to the needs of the section. Each has a director, who reports monthly to the council. The professors are entitled probationers (stagiaires). Those who show superior capacity at the end of the year are given diplomas by the council as titular professors. Much pedagogic and demonstrative material is kept at the central home of the association, and a monthly bulletin is published. At the annual commencement at the Trocadéro, and presided over by the minister of education, there were last year 538 laureates, and 233 of the prizes were given to women. Certificates for seven lines of work are given. There are now 25 sections and 367 courses. Ten sections are reserved for adult men and eight for adult women. There were in all 7,722 pupils in 1888. The courses are electricity, book-making, mechanics, insurance, etc. The city council gives each year 15,000 francs, the minister of education 4,500, and the minister of commerce 8,000 francs.

La Ligue Française was founded in 1866 by I. Macé. Its object is to establish schools in rural communities and in the colonies. It is a federation of societies, or local circles, each essentially independent, in the larger cities. In 1870 there were 59 circles, 18,000 members, and a budget of 70,000 francs. A new régime began with the government approval in 1880, and the congress of the ligue in 1881. A council of 30 members publishes its bulletin and directs its work. There were in 1889, 1,298 of these societies under various local names. It is now sought to found an education society in every small town. In 1872 the Ligue obtained a million signatures to a petition for education that should be free, obligatory and lay.

The General Society of Teaching and Education was founded in 1867 to discuss all educational questions from the point of view of pedagogy, society and religion, to scrutinize textbooks and methods of examination, to aid and advise teachers in all legal matters, and to assist schools conducted in a Christian spirit. It has about 100,000 francs per year, half of which was distributed to 450 schools in 1887. It opposes free obligatory and lay instruction. It is aided with funds by diocesian committees, has its monthly bulletin which ably covers the whole field of Catholic education.

The French Young Peoples' Union grew out of the war of 1870, and began its work of popular education in 1875. Members must be under thirty. There are now about 1,500 members and 300 professors and 8,000 pupils. The minister, city council and council of the Seine aid it. The society is a union of high and low, rich and poor to make educational propaganda, for economic, and political rather than for scientific knowledge. Hygiene, history and geography for working men, the elements of civil and commercial law, and the great works of literature are its material.

The French Alliance was founded in 1883, and has grown from nine members to 15,000, and extends now to all the French colonies. Its annual budget is 80,000 francs, and it has spent 100,000 francs in medals, prizes, books, etc. Its object is to diffuse the French language in the colonies and in other countries. Its resources are gathered by a general secretary and general committee of propaganda, and distributed by an administrative council of 50 members elected in the general assembly. In the department it has 50 delegates and 40 local committees of propaganda. In Algiers *e. g.*, where but 10,000 of the 400,000 children attend school, the Alliance began by distributing prizes ofbooks, and then founded little libraries, then gave medals to the best native teachers. There are now four committees and 1,382 members in Algiers. Active branches exist in Senegal and the Soudan, Madagascar, New Caledonia, Greece, Egypt, India, China, Japan, Guyana and in every country in Europe. In the United States there are many branches (New York City, Providence, Chicago, Washington, Louisiana, California, etc.). In 1887 these societies were visited by M. H. Boland from the Alliance who reported their touching fidelity to the French language. Canada, Mexico, Central and So. America also have many active societies. The *Bulletin* of the society is read in all these branches where the hope of seeing French become a universal language without abolishing other national languages is ardent. The Alliance is entirely unofficial, and private. As the propagation of the French language is in a sense the key to the foreign markets, the Alliance is related to commerce, although its activities have been essentially disinterested and are in a sense the mission work of French patriotism.

Associations of former pupils of Normal and primary schools. There are fifteen associations of normal graduates, the oldest of which was founded in 1868. Some of them have statutes approved by the government. Their purpose is moral and pedagogic but they differ considerably in their purpose, spirit and methods. They aid orphans, give prizes, examine and report on text-books, and construct their own communal list, establish libraries and publish bulletins. These clubs are divided geographically and not by the institutions where the members studied, and are conducted by an executive committee elected usually for two years. They all unite in a general assembly. At the annual banquet old and recent graduates from different institutions meet as in a great pedagogic family.

The associations of former pupils of upper primary schools are of course far more numerous, and represent individual schools. Mutual aid is a far less common or prominent object than to attract pupils to the school and to aid it in competing for prosperity with others and to aid former pupils. The minister recommends the formation of similar societies for higher schools.

The orphanage of French primary education was founded in 1886, but local private organizations for the same ends existed before. It adopts and educates orphans of former members. The minister of instruction is its head, and its home is in Paris, 16 rue de Tournon. It has an annual general assembly, publishes its Bulletin, and has branches and members in every department.

Teachers Mutual Aid Societies. Although the first of these societies was established in 1843, it was not till 1858 that they began to be founded in any considerable numbers. Between 1858 and 1863, 26 were established. They were the product of a spirit of fraternity, and the minister urged the formation of more and drew up model by-laws. Between 1864 and 1866, eleven more were founded mostly because of the ministerial appeal. Between 1866 and 1886, 44 more came into existence. The object of these societies is to aid the sick, widows and orphans, to pay doctors' fees, and funeral expenses. The maximal age of admission varies between the extremes of 30 and 55 years. Orphans are aided from three to 14 or even 18 years. Besides participant members there may be honorary members who are not teachers, *e. g.*, a benefactor, a doctor who has treated members gratuitously. Some of these societies have a special system of retiring pensions, care for the property of orphans and have savings departments. All payments are made by a carefully calculated scale, and the work of these societies is so manifold yet so well conducted that intelligent membership is of itself an education.

NOTES.

Thomas Jefferson and the University of Virginia, by HERBERT B. ADAMS, Associate Professor of History in the Johns Hopkins University. Published by the U. S. Bureau of Education. Circular 1, 1888, pp. 303.

The University of Virginia was the first attempt to transform the Colonial college into something better and higher. It represents the union of religious interests and the support of higher education by the State, and the centralization in university education, and discentralization in preparatory and common schools. The latter, Jefferson thought, should be supported by local taxation, and school wards, like military districts, should have as entire control of primary schools as of roads and bridges, and the former by the state. He devised the plan now in operation in New York, by which gifted boys are aided up to Cornell University, in a way which would save us from the over-education of mediocrity and the under-education of genius. Washington advocated a national institution "to educate our youth in the science of government." Jefferson struggled fifty years in the "holy cause of the University" before it was established (1819) on a solid financial basis. The letters, reports, laws and inquiries about the university at Virginia, touch nearly every great question in the field of higher education so far as then defined. His ideals however, came from a study of French institutions more than any other. He anticipated many of the soundest of modern views such as the desirability of a non-sectarian basis for higher education in the study of the language of the old and new testament as the best basis of a theological training, student self-government, the importance of history, politics and economics, and of technical training, etc., the elective and the group system, the granting of degrees by courses, and not for four years residence, etc. The University of Virginia is the lengthened shadow of one man. Even the unique building plans were from Jefferson's own hand, and he trained his brick-makers, carpenters and masons, and taught them to put on a tin-roof. The Pantheon, the theatre of Marcellus, the temple of Fortuna Virilis were reproduced in part in reduced size.

Jefferson's first idea was to develop the course of his Alma Mater, William and Mary college. At one time he discussed removing to Virginia the entire Swiss faculty of Geneva. Quesnay's Richmond Academy was far more actually realized and built in 1786 supported by French capital, closely affiliated with the French Academy, and less closely with the royal societies of London, and other learned bodies in Europe, with twenty-five resident and one hundred and seventy-five non-resident associates. The United States Academy was to establish other American branches, and exploit the mineral and other natural products of the country, and Paris experts were to teach American youths, and act at the same time as agents for governments and joint stock companies. Quesnay made diligent propaganda in this country and in France, and raised 50,000 francs. and had his scheme been fully realized, our mines would have been controlled by European capital, and our forms of culture, than which nothing is more enduring, might have been as French as Canada was Jesuit. The building was finished, many of the most distinguished Americans and Frenchmen were enrolled as members and associates, one professor appointed, and the project seems to have found favor in Europe. But the French Revolution was impending, the building was turned to other uses, and at last the great influence of French philosophy in Virginia and the Carolinas was slowly undermined by a current of Scotch Presbyterianism from Princeton College.

Jefferson's ground plan for education in Virginia in his original bill of 1779, was free schools for both sexes with the use of reading books containing only history, and all education chiefly historic. The talent always latent in the common people was to be sought out and educated freely up through the university, on which the state should focus its chief care. Culture always begins with the higher education of the few and lower forms proceed from these. Virginia like New England began with classical schools and colleges. Although Jefferson believed ignorant masses to be the chief danger of republics, he would not force any locality to maintain schools, but the southern county was the unit which he could not break up into wards or towns for his purposes.

Nemours a French visitor, wrote a plan which broke away from all historic university constitutions and faculties, and "Washington was to be the centre with four great professional schools, and a grand palace of education second in splendor to only the capital itself, containing library, museum, rooms for a ministry of public instruction, etc. This extravagant scheme showed how state education was in the air.

Jefferson's idea of a curriculum changed much. He would have only branches likely to be useful and weed out from Bacon's scheme of human knowledge all others. There should be no theology, but ethics should be prominent. His original three groups was later arranged as ten. Men of sense and science combined, he would lop off as nugating somewhat as he strove in his revised code to simplify the verbose and intricate style of English statutes. He would establish democracy upon a philosophic basis avoiding all revolutionary French schemes. Classics and mathematics was the best of all training. His friend Cabell worked in the legislature for appropriations and for the aid of the so-called literary fund, (which had been set apart for educational purposes from certain escheats and forfeitures.) while at the same time local subscriptions were taken to develop Albemarle Academy. There was great opposition to all centralization; the non-sectarianism of the scheme was branded as irreligious; William and Mary College fought for its life; many had little belief in education. Jefferson urged that only education had raised white men above the aborigines, and that his university was to be above the college, and he gradually worked out the unique plans of buildings, now realized in brick,—long low buildings consisting of rows of students rooms opening into a long covered walk, with every few rods a professor's house rising a story higher. Two rows of these buildings face each other, separated by a lawn, and back of each row is a second series of buildings for more miscellaneous purposes. At the head of the central lawn is the pantheon-like library building. These rows might be both multiplied and prolonged and thus the academic village might be extended indefinitely. Jefferson personally watched the details of erecting the buildings, sometimes through a telescope from his Montecello house. When he died in 1826, nine years had elapsed since the calling of the first professor, and two years since the state had freed the university from debt.

Here the story of Dr. Adams ends, and the last half of the volume is devoted to the later history and influence of the university which is better known with six or seven other Virginia institutions.

Few institutions have exerted such an influence during the first half century of their existence. Its eight schools expanded to thirteen at the time of the civil war, and now number nineteen, of which twelve are academic and seven professional. Each student must elect at least three schools and is given the title of graduate of each school whose course he completes and stands examination. Before the university was established, about half the students of Princeton were Virginians, and Jefferson thought more than a quarter of a million dollars were carried abroad by students from Virginia annually. There was almost no basis of primary and intermediate education at first, and this has largely been supplied by growth downward. It has been the leader in southern education. There is no president, but a professor is annually elected chairman. There are no classes in the common sense, and length of residence has nothing to do with obtaining a degree. The discipline is chiefly in the hands of the students, who punish, sometimes by expulsion. Cheating in examination or any flagrant form of lying or dishonor, espionage, trickery and rowdyism are remarkably rare. The term has almost no break from October to July, and no Saturday holiday. There are 232 working days in the academic year, a number perhaps without parallel in the world. There is a permanent fund of nearly $300,000, and $40,000 per annum from the state on condition of receiving Virginia students without tuition. Nearly three-fourths of a million dollars have been given for various special purposes, mostly since the war. The German system of giving the professor the student fees for his own courses was tried and abandoned. A chaplain is elected by the professors for a term of two years each, from the three leading denominations of the state in rotation. It is doubtful whether so much or so valuable writing and research per professor was published from any other faculty during the forty years ending with 1880.

We have had no example in this country of what an university could do for a state, so analogous as this to what her educational system has done for Germany. Both are systems that concentrate the intellectual light and send back the intensified rays over the land. Outside the state its spirit and methods have been dominant throughout the south, and its influence upon northern institutions has been far greater than commonly known. We shall perhaps never know how much the Harvard elective system, and the present voluntary and rotating chapel methods, as well as those of Cornell, the new scheme of measuring work by courses rather than by a four years residence, the Amherst device of student self-government, the Johns Hopkins group system and seminaries and other advanced methods, the present change at Columbia, may have been due to, or affected, consciously or not, by this unique institution and by the wealth of educational thought of its great founder.

The College of William and Mary, a contribution to the History of Higher Education, with suggestions for its national promotion, by HERBERT B. ADAMS, PH. D., Associate Professor of History at the Johns Hopkins University. Circular of Information of the Bureau of Education, No. 1, 1887, pp. 89.

In 1619, the Virginia Company, made a grant for a University at Henrico, to educate Indians. This sum was augmented by the bishops. Again, in 1624, an island near Havre de Grace was granted. In 1660 the Colonial Assembly voted to establish a college. In 1691 a charter was obtained, and a grant of money and land was made. Tobacco was taxed for its support, and it was given the control of land surveys, income from which it retained till 1819. The motives of all three beginnings were piety and religious propaganda. Hugh Jones, an English clergyman, who became a professor of mathematics at the college, proposed, among other changes, a training school for the civil service of the colony. As the college controlled surveying, its graduates should be appointed county and secretaries' clerks. The college of William and Mary was founded by royal endowment, around a church as its center. In the South family training, tradition and tastes pointed to political careers then as now. The county was then a great object-lesson for the study of the constitution of government and society. Politics was then and there fast becoming history. Students had opportunities not unlike those of the lesser clergy and nobles, who came with the greater barons of the realm to the English itinerary parliament, before the House of Commons existed. That Jones saw this possibility of a school for statesmen, and that urban sites for colleges were better than the country, are matters of unbounded praise by the author. "The bucolic view that expects higher education to flourish in open fields," and "professors and students turned out to pasture like superannuated horses and untrained colts and expected to feed on grass like Nebuchadnezzar," are "survivals of the monastic system." Among the distinguished political leaders graduated from this college was Washington who, under the state system which placed land under control of colleges, was appointed surveyor; who was chancellor of William and Mary; who gave an endowment, the fate of which the author thinks Congress should inquire into, for a National University for education in all the arts and sciences and politics. It was Washington who said with "indescribable regret" that he saw young men going to Europe for advanced study. He tried to impress on Congress how much a flourishing state of the arts and sciences contributes to national prosperity and reputation," and wished young men freed from local prejudices and sectional jealousies by association.

The motive of this sketch is the idea of a civil academy in Washington. Picked students should be appointed on merits from all parts of the country, and paid $600 per annum, like cadets at West Point and Annapolis. These "government fellows" should be under no scholastic discipline, but be treated as government employees under guidance of an educational commission. Lectures by both government experts and university specialists should be given. As special rewards a few best men might be sent to study abroad, and be employed eventually by the Bureau of Labor or of Statistics, in taking the census, as consular clerks, etc. The basis of such an institution already exists in the Washington High School, which should be developed into a free government college of scientific politics. This institution might be established by President Cleveland with peculiar fitness, because he is from the "pivotal" State of New York, where a merit system and a State board of Regents, who may sometime control academic degrees in the State, are both found. The Johns Hopkins University has many graduates in the government employ, is nearer to Washington than is either the University of Virginia or the College of William and Mary, and some pages of information concerning it show how national it has become and how it might aid in such a work.

The political part of Washington's proposed university is emphasized somewhat beyond its historic proportions, the influence of Hugh Jones and President Drew over-estimated, and the work of the college of William and Mary represented as disproportionately political. The pamphlet is really an argument for a noble scheme, which is not, however, lifted above a local point of view.

Inaugural address by President E. D. WARFIELD, of Miami University, Oxford, O., June 20, 1889.

A concise sketch of the educational organizations of mediæval universities is followed by a warning against the abuse of degrees, and against the folly of attempting to do too much, and a timely exhortation to do what is done well. An university must be free, and must incite the love of wisdom, becoming thus an organ of the intellectual life of the nation. First those branches chiefly disciplinary must be selected. While holding all branches in honor, especial devotion must be given to those approved by the matured experience of centuries for training and development. A broad but profound religious spirit should prevade all. The temper of the address is vigorous, earnest, progressive and wisely conservative, and is another hopeful and significent sign of the present reaction towards an old fashioned disciplinary and wholesomely restricted academic curriculum.

The American College in Relation to Liberal Education. Inaugural address of President DAVID J. HILL.

Dr. Hill was for some years president of Bucknell University, Pennsylvania, and is favorably known by his two successful text-books on rhetoric and on psychology. On accepting the call to Rochester he was given a year's leave of absence to study European institutions. He acts upon the old conception of an inaugural as a confession of educational faith, and so treats briefly language, mathematics, sciences, philosophy, etc. Most important however, is his expression of satisfaction that while the university of Rochester has had the charter privilege of becoming a university in the proper sense, it has honestly been and preferred to be what its resources justified, a college in the true and historic acceptance of the word. "Should it ever expand to the full limit of its prerogative, I trust it will do so by legitimate internal growth, and not by a mere vote of the corporation." He condemns the "shameful competition among rival colleges in diluting courses of study to suit the callow intellectual estimates and even the cerebral weakness of undergraduates, really forming the curriculum on the principle of the market rather than on the principle of scholarship, literally and openly rivaling one another in offering attractions, hardly more dignified than the chromos of struggling newspapers. The result of this is that while most of our colleges wish to be thought universities, most of our universities are merely colleges." The bachelor's degree he adds has an ambiguity that places it in peril of contempt at home, and of ridicule abroad. The function of the college is to prepare for large personal or professional development. It may be to satisfy love of knowledge, to introduce to more special pursuits, give a generous outfit of intellectual attainment, to mature and invigorate the mind, and to give it an ample furniture of general knowledge. In these terms Dr. Hill defines the function of the lycée in France, the gymnasium in Germany and the college in our country.

A People's University, by PROFESSOR J. G. SCHURMAN, of Cornell, University, Jan. 11, 1888.

"We are slaves of an educational sytem, that although admirable in its day is not comprehensive enough" now. A man may be as truly educated in business, or in the workshop, as in the laboratory or seminary. "The equal worth of every subject of study;" "philosophy is not more venerable than wood-working;" "the steam engine is as sacred as Greek;" "the analysis of soils is as important as the analysis of literature;" "we must hold all subjects equally reputable and provide instruction in all alike,"—these are the phases in which Ezra Cornell's" motto, "I would found an institution where any person can find instruction in any study" is enforced. This ideal university is not construed to justify Cornell as Hegel's political philosophy was to justify the constitution of Prussia, but is "deduced" by "independent reasoning." "Cornell has "endeavored to supply all the means of culture," it "stands up for all subjects alike" and "has steadily aimed, and at enormous expense, to make its departments second to none in the country." On this celebration of our founders day let us be assured that "education of the people by the people and for the people shall not perish from the earth."

The College as distinguished from the University, an innagural address by **PRESIDENT FRANKLIN CARTER** of Williamstown, 1881.

The plea here was for a general old fashioned American education before its specialization. The mind must be made a cosmos, and not enfeebled and distracted to a choas by a profusion and smattering of loose electives. The ancient languages and mathematics are basal, have still the greatest culture power. The college professor must be an inspiring reverent teacher, with power to act benificiently on the development of character and hold character even above science, wisdom above knowledge. The university but not the college professor is an eminent specialist. Dr. Carter warns colleges not to praise themselves until they think themselves perfect and consequently never become so. Religious influences must be strong in colleges, and a plea for a chair of the history and polity of the Hebrew Theocracy is based on the supreme worth to that race of moral ideas. Their mythology was better organized and more ethically effective than that of the Greeks and Norsemen, they were purer than the Greeks, more self-respecting than the Romans, had more family feeling than the English. Their ideas have had vast influence in history and great pervasiveness in literature, and lastly, our Saviour was a Jew.

Inaugural Address of **PRESIDENT PATTON** of Princeton, June 20, 1888.

After a well-merited compliment to the retiring President McCosh, an university is defined as a home of culture, where learning keeps state, and men are interested in things of the mind, remote from the excitement of trade, a place of endowed research. Religion should not be cultivated to the neglect of science, or science to the neglect of religion, and faith with the dead should be sacredly kept. It is not the essence of a university to have four faculties, Salerno had only medicine, Bologne only law, Paris only theology. "If a faculty of medicine may be an university, a faculty of philosophy may surely be one. And what is a well-equipped college like this but a Faculty of Philosophy?" The *genus* university exists then under several species. Thus "Princeton is already a university if there ever was an university in the world." It has Laurie's three notes of general study, freedom and autonomy. "The genius of the university is freedom, but the genius of such an university as this is qualified freedom." A theological seminary should be under the supervision of the church whose theology it represents. Learning should be called valuable for its own sake rather than for the uses made of it. Yet "original research is a luxury for the few." Most call it "a pleasant land but a barren soil." "Pure science with a practical outlook" is the ideal. "Language should be a ladder to literature and not literature a ladder to language." History must be treated philosophically. The history and philosophy of jurisprudence should also have a place. Philosophy should be treated with great care, but enlarged. Although not ardently in sympathy with "what is erroneously called the new psychology," it should be cultivated. More liberty of electives in the last two years, more fellowships, just restriction of the "phrensy of amusements, and the phrensy of examinations," yet much exercise to lessen the temptation to tobacco and intoxicants, and above all more and larger christianity, are the noble ideals to which this inaugural address was devoted.

Evolution of the University. First Annual Address before the Alumni Association of the University of Nebraska, June 11, 1889, by **GEO. H. HOWARD**, Professor of History in the University of Nebraska. 1890. pp. 36.

Institutional history treats of living organisms, like a biological science. The history of the university is traced from the embryonal scholastic guild, represented by both its democratic and centralized type, when the decretals of Gratian and the sentences of Peter Lombard held the staple matter of the *studium generale*, and the privileges and immunities were the Magna Charta down through the thirteenth and fourteenth centuries, showing the evolution of faculties, degrees, officials, ceremonials, etc. The triumph of the college over the university is then briefly sketched, and finally the renaissance of learning in the United States. The author has diligently used the many authorities which he cites, and perhaps it would be hard to cover the vast field here outlined better in so small space. These pages would make a good "finder" for a student.

Mr. Justin Winsor, who has written several interesting University letters from Scotland in the *Nation*, predicts that women are to be admitted to the University of Edinburgh on the same standing as men. Lord Kinnear's parliamentary commission, now in session, which may not make its proceedings public for a year, may also reduce the relative prominence of Greek. At present there are eighteen arts professors, the instruction of only seven of whom is necessary for a degree. It is hoped that this number may be increased from seven to 26 classes of subjects. The 18 chairs have now an income of about 13,000 pounds, of which about half comes from student fees, while of the rest, 2,200 pounds comes from parliamentary grants, and 3,600 pounds from endowments. Salaries are very unlike, and the size of classes seems not to depend very much on the attractiveness of the professor. There is almost no instruction in history, and the professors collect their own fees. This wasteful business administration makes the high achievements of this university all the more remarkable.

The Orbis Pictus of Comenius. Syracuse 1887. pp. 200.

This famous old educational classic which represents the first application of Baconian empiricism to lower schools was first published in in 1658, was the first picture book ever made for children and was for a century the most popular text book in Europe, next, perhaps, to the Satyricon of Capella which for 1000 years was the academic compendium of human knowledge. The original 150 cuts are photographically reproduced. The original Latin text has been retained, but old English substituted for the high Dutch. It is a little encyclopedia in itself of the knowledge of its time, still full of interest to children and adults, as we know experimentally, and its reproduction in such admirable form reflects much credit upon Mr. C. W. Bardeen, its publisher, whom we hope will be encouraged to print the Vestibulum and Janua.

Quelques Mots sur L'Instruccion Publique et Privée dans la République Argentine, par Le DOCTEUR J. B. ZUBIAUR, Paris, 1889, pp. 110.

The author who represented his country at the Paris exposition is inspector of national schools and colleges and editor of *La Educacion*, Buenos Ayres. His ideal is an education that makes man a noble animal first, and does not mutilate him physically. When Spanish dominion ended in 1810, after three centuries, education was at a very low ebb. Now the republic has four million inhabitants, two hundred and sixty thousand children in schools, supported by the nation, the provinces and towns combined, thirty-four normal schools, fifteen national colleges, and two universities,(Buenos Ayres and Cordoba) each with three faculties, law and social science, medicine, natural and physical science, and with 739 students. The university of Buenos Ayres was founded in 1821, in a city of 400,000 inhabitants; that of Cordova in 1622 for the benefit of Indians as well as Spaniards. The alternating periods of anarchy and tyranny have more than once almost made a tabula rasa of the field of educational progress, but since the constitution of 1853, reformed in 1860, all seems now settled and the organization and high quality of work will be nothing less than astonishing to North Americans who read this book. Not only the Argentine but other South American states, owe the first and chief impulse to Sarmiento, who was an admirer of Horace Mann, and whose plans included kindergarten and university, libraries, manual training, and a complete co-ordination of all stages of education. Both universities are now regulated by the same national law, which gives the most complete freedom in all internal matters. The rector, and the dean and a delegate of each faculty compose a superior council who nominate professors to the president of the republic. The annual budget of the university of the capital is 320, 000 of our dollars, that of Cordova 130,000. The law course is five years, and comprises civil, international, Roman, penal, commercial, constitutional administration and economical law, procedure, political science, finance, philosophy of law and legislation. Each of these subjects has its professors, and civil and international law have two each, making 15 in all. The medical course lasts six years, and has in all thirty courses, including legal medicine, mental pathology, nervous diseases, pharmaceutic chemistry, and chemistry applied to medicine and pathological anatomy with 27 professors. The natural science faculty has 28 professors in each university and a course of six years. Salaries are small, but tenure is permanent, and the long summer vacation falls in our winter, so that an educational visit to these institutions could be easily made. The thesis for all higher degrees and in all faculties must be printed. All faculties require for admission a certificate of six years of preparatory study in one of the national colleges to which latter the average age of admission is 12 years. At the universities the average age of entrance is thus 18. Conferences and lectures are the form of instruction, but thirty absences per year are permitted, and there is a pass and an honorary examination. The buildings for law and medicine at the capital are new, and a monumental university building is now begun. At Cordova elaborate buildings have been voted, but the university is chiefly installed in an old Jesuit convent and its annexes. Among the reforms now desired are a faculty of letters and philosophy, and more encouragement to science for its own sake. Women are now admitted to the medical faculty, and Cecilia Grierson last year finished the full six years with honor. Piñero and Bidau have just published the history of the university of Buenos Ayres in three large volumes.

Of the 15 national colleges the oldest that of Montserrat at Cordova, is more than two hundred years old, and the youngest, that of La Plata, founded in 1884. These are directly under the minister of public instruction, who names the instructors, makes the programs, etc. Their six years course is primarily preparatory for the universities, but contains much local history and geography, Spanish literature and civic, economic and philosophic material, with Latin and French, but no Greek, and is obligatory for all. Latin is very much in debate and is feebly taught. To enter boys must have satisfied the requirements of primary education, and graduate with the title of bachelor. There is no internate or boarding system, and no national prizes. Each instructor must have between four and eight hours of work per week, and may retire after ten years service on half pay, two-thirds after fifteen, and full pay after tweny-seven years service. All these institutions cost more than half a million dollars per year, had last year 2,626 pupils. The college of Buenos Ayres is largest, and has 87 teachers, among whom are not a few foreigners, and 927 pupils. These are under the immediate control of three inspectors and a council of secondary, like that of primary education is contemplated. When stipends were surpressed in 1876, the students of the college of Uruguay formed a society which now supports 80 students.

There are now thirty-four normal schools, all founded since 1871, of which thirteen are for men, fourteen for women, and seven are mixed, and all with practice schools. These are of two grades, higher and lower, and the course lasts from three to five years, and have all told, over 11,000 pupils. The plans of the normal buildings at Buenos Ayres, and at D. Entre Rios are very interesting Primary education represented by 3,227 schools, and 254,608 pupils, or about half the school population is by law obligatory, free graded and hygeinic and in one province lay. The revenues at the disposal of the council arise from fifteen different sources. The republic publishes ten journals.

Liberty is to man as oxygen to plants, and now an army of instructors pour the baptismal water of science on the heads of the rising generations. Education is practical and seems especially designed not to make orators to whom so much that is sad in the history of the country is due, so that there are no courses in literature. The demands of the future are first of all a better organization of the many parts of the system, the enlargement of the many trade and industrial schools, school houses plain but spacious. Six of the best professors are to be sent to Europe the present year by the government, to study educational questions. Work for discipline and schools is the Argentine synthesis and motto, and in several other Latin American Countries, teachers, more than laws will decide the future of humanity. The prodigious ardor of European races transplanted to the new world has made the southern states surpass Spain as the northern are soon to surpass England, and has already attracted the most favorable mention by many European authorities.

Report to the Trustees of the Dick Bequest on the rural public (formerly parochial) schools of Aberdeen, Banff and Moray, with special reference to the higher instruction in them, by S. S. LAURIE, Professor of the Institutes and Hist. of Education. Edinburgh, 1890. pp. 150.

Only five hundred copies of this report of the visitor are printed. The history of the Scotch parochial system begins in 1560, with John Knox's first book of church discipline and policy, which is called "the most interesting of all documents in the early history of past reformation education in Europe." Every Kirk must appoint a schoolmaster of grammar and Latin, even if the population be so sparse that the youth can meet but once a week for instruction in the catechism. The larger the town the larger and the more time given to the school. Their parents must be *compelled* to replenish the universities. After 1633 schools were established in every parish, for which the bishops might impose tax. The presbytery fixed the teachers' pay, which was to be readjusted every 25 years, according to the average price of a chandler of oatmeal. Only in 1861 was the power to examine teachers transferred from the presbyteries to boards of examination appointed by the courts of each of the four universities. The heritors and minister of each parish could dismiss or censure teachers for neglect of duty, and the county sheriff for immorality. The heritors can assess themselves for several schools, but only to a limited amount, and the presbytery's power of visitation was not repealed. Thus teachers are virtually appointed *ad vitam aut culpam*. James Dick, who died in 1878, bequeathed 113,147 pounds, yielding an annual income fluctuating from seventeen to twenty-seven thousand dollars for the benefit of country parochial schools in the three above counties. This fund must be used to encourage the best schoolmasters in such a way as not to diminish the extent of the present support of these schools. The trustees accordingly first imposed a severe examination on all teachers wishing to share the bequest. Marks, each with a money value, were attached to all the higher subjects, and for merit in teaching. The trustees and local clergy report to each other, and thus the confidence of the latter in this intrusive alien "authority" is secured. Biennial visitations of schools are made. After 1861, the government also aided and inspected annually such of these schools as conformed to the conditions of the parliamentary grant. In 1872 these schools were removed from church control and given to boards of elected rate payers. At this time, of 150 teachers in these three counties, 130 were masters of arts, as were hardly one in fifty elsewhere in Scotland. There had been a steady flow of young men from these counties to the university, and as payments are graduated anew by merit each year, the stimulus is constant. The teachers must now first of all have a good government record, and higher subjects began to disappear from these schools. During twenty years, ending 1879, of the highest fifty annual entrance bursars, 20.4 per cent. came direct from parochial schools, and this downward tendency in university subjects was only checked where the Dick bequest was applied. The annual bursary competition for Aberdeen University had long been the common meeting-ground for boys from the northeast of Scotland, who sought an university education, but were poor, and had become the sole standard by which the training in both grammar and parochial schools was measured and compared. But with more travel, the opening of the lower branches of the civil service training colleges, the new examinations required of low-agents and pharmacists, other standards arose. Higher subjects are pursued elsewhere, and Latin, French, and advanced mathematics, formerly often found in these rural schools, are now rare. The Dick fund must now be applied to advanced science, modern languages and literature, as well as to Greek, and whenever a master does this work, which is beyond the requirements of the government code, though he send a boy to the university only every two or three years, he should benefit by it. Advanced work in other than university subjects should be rewarded. In olden times the universities had preparatory classes which brought them profit, and hence they had no interest in organizing a good secondary education. Now the rising standards of the universities remove them still further from parochial schools. To prevent this is one purpose of the Dick fund. Mr. Craik's new code of 1890 bases government grants on average attendance, and are paid without individual examination, so that teachers are now free to educate children. This change is very favorable to the Dick fund, which will now reward any subject whatever beyond the required standard. The larger body of bright boys in these 123 schools will be aided, and at the worst the university candidates must go elsewhere at a certain stage of their training. Dick examination papers, the new code, etc., are appended. The book as a whole is full of interest, and shows the practical work of a professor of pedagogy to great advantage.

De la Réforme de l'Enseignement Superieur en Belgique par AD. DE CEULENEER and CH. DUMERCY. Louvain, 1876. pp. 75.

This little pamphlet, written while the important law of 1870-5 was pending, is a plea for a reorganization of the Universities of Belgium, so complete and ideal that it merits a lasting place in the history of reforms. During the long provisional regime, lasting since 1830, Belgium had shown the tendency, too familiar in our own country and which always marks educational decadence, to discuss questions on which there were grave differences of opinion, rather than to solve those on which convictions and interests agreed. The field of the commission of 1870 was limited to programs, examinations and degrees, but the discussions of the next few years took a far wider range, and the young authors of this pamphlet plead for a radical general reform. Belgium, they say, has not profited by the experience of neighboring lands, and less than any of them has studied the problems of higher education in a broad comparative way. Educational institutions keep up the scientific spirit, and not *vice versa*. They must keep the nation up to the level of the highest in all that makes for progress. Universities are not primarily professional schools. So inert have the authorities become that it is almost by a conspiracy of disinterested devotion to science that the scientific spirit, which is the life of the present time, has been kept alive. Universities which are mere examination laboratories can do little to cultivate pure science, and if love of this is not supreme its very application to the useful arts languishes. Science should be free from without and from within in proportion as it is pure and absorbed in the love of truth *per se*, and its degradation to utilities and the subordination to programs, professions, etc., has been more cause than effect of its loss of proper liberty. As for examinations, neither the system of a central jury of 1835, nor that of combined juries in 1849, has worked well with either the official nor the two free faculties which they were intended to place on an equal footing. The free faculties disliked official intervention, and the rivalry of the two systems was often angry and injured rather than advanced science. Again, if an advanced student develops marked taste and ability in a special part of a prescribed program, he should be encouraged to consecrate himself to it and be allowed to justify his work in it by an examination for a degree and not be forced to spread his activity over the wide field of the official program. Students should not be inert material to be wrought upon and worked over by a prescribed plan, but should be regarded as living and free beings, and their rights of initiation not only respected but encouraged. As for freedom in the exercise of the liberal profession, the United States is now the only country in the world where this is permitted, and civilization and education there are at so low an ebb that its condition may be described as barbarism illuminated by gas. To leave the legal profession free would be to surpress it, while in medicine it would open a vast and dangerous career to charlatanism. The opposite extreme of a complete monopoly of education would be preferable to this. The authors give with some detail a scheme of professional examinations for advocate, notary, state engineers, pharmacy, and doctors of medicine. A diploma of doctor of laws should be required of each candidate of the two first subjects. In all there should be two examinations, the first for a diploma, and the second professional, with an interval of at least a few months between each. If the two free were homologized with the State universities, so that students might be left entirely free to fit for examinations wherever they deemed the opportunities best; the free and State institutions would be brought into no less wholesome rivalry than are the too free institutions to each other. Professional examinations ought to be made before a large jury annually, named by the king, and self-divided into sections of eight each, of which half should be professors (two each from the free and the official universities), and half lay leaders in the respective professions. It should hold two sessions per year at Brussells. The subject-matter of examination should be much narrowed, and requirements should be far more restricted but far more thorough, and should by no means be as extensive as the subject matter taught. The sentiment, too prevalent now, that salvation consists in increasing the scope and number of examinations, is the exact opposite of the truth. They are now so many and vast that it is impossible to make them severe or even serious. They require *et omnibus aliquid, et in toto nihil*. Each examination ought to correspond to a distinct scientific grade. There should be two, candidate and doctor, the first crowning general and the last special attainments, in each of the following courses: philosophical, historic, philological, natural science, physics and mathematics, and the professions. To take the doctorate of political sciences, one must have already become doctor of laws. No professor should have exclusive apanage of a scientific field, but a young instructor should be so placed as to freely compete in all parts of the field. The scientific spirit spreads in a nation by means of such modern methods as seminaries, bibliographies, *raisonnées* of each course, which should be required of each professor, large prizes for inter-university competition, travelling scholarships and fellowships, which should be far more carefully planned and supervised than now. Many little prizes and competitions, as well as a few large ones, that distributive justice may be done to all the 60 state fellowships, should be increased to 80, larger competition and rewards reserved to those who have taken final degrees; the migrations of students from one university to another, which is one of the chief causes of the vigor and wholesome competition of German universities.

La Liberté dans l'école.—Première traduction francaise, par B. Tseyttine et E. Jaubert, avec une lettre de M. Michel Bréal. Deuxime edition, Paris, Nouvelle Libraire Parisienne, ALBERT LAIME, Editeur. pp. 285.

This work of Count Tolstoi was written in 1862, but has been translated only into French, and that not until 1888. It has apparently not attracted much attention from English readers. The reforms for which it pleads, have made much progress since it was written, but the complete realization of the theories advocated is still far in the future. This makes the book still of interest and value.

"Liberty in School" means to Count Tolstoi something more than a possibility of pursuing elective courses in colleges and schools of the highest grades, though it includes this. It means freedom on the part of the parent to send his child to the elementary school or not as he pleases, though this may involve the possibility of a child's coming to maturity without a knowledge of reading and writing. So far from shrinking from the conclusion to which his theory leads, the author denies that a knowledge of reading and writing is necessary to a life of industry and virtue. In connection with this it should be remembered that Count Tolstoi's philosophy places the greatest stress upon industry and self-support, even to the length of making them the means and method of virtue. The argument for liberty is made to rest on facts open enough to any body, but of new significance when interpreted by a man of genius. There is in all communities a class that desires to be instructed, and a class that desires to instruct, yet the class that desires instruction has to be forced by the class that instructs to receive that which the latter desires. The explanation of this strange fact is found in the supposition that schools do not supply the kind of instruction needed, nor give it in a manner suited to the wants and powers of the class to be taught. That schools which are in any manner or degree compulsory can ever satisfy the class that demands instruction is denied on the ground that no one class in a state can know what is best for any other class, nor any individual know what is best for any other individual. While all schools have made the learning of some one or more things obligatory, there has been diversity of subjects in different countries, and changes of subjects from time to time in European countries, and at present the number of sciences to be taught is so great, that the task of selecting and dividing has become impossible to achieve. That it is impossible to answer the question why one thing should be taught rather than another, is shown by a review of arguments, classed as religious, philosophical, experimental and historical. The religious and philosophical arguments are both refuted by the statement that there is no argument on either subject; while the advocates of all systems agree as to the end to be gained, there is the greatest disagreement as to the means of reaching the end, and experience yields no results that justify the claims of one system over another.

The argument from experience meets with no better fate. That attendance in schools can be required on account of the results in virtue and intelligence is denied. During an extended examination of the schools of France, Germany and Switzerland, Count Tolstoi became confirmed in his belief that children are debased in morals and in intellect by the methods and matter of instruction. Whenever he put a question to a child in school, the child invariably tried to recall something learned in a book, usually a form of words. In some cases the examiner asked for written compositions on the subject: "What did you do last Sunday?" Boys and girls without exception, wrote that they had used all possible opportunities to pray to God, and had not played. Nowhere did he find wholesome, mental or moral activity due to the school. The principal part of instruction he declares is gained not from school but from life. Schools are established he says, not to instruct the people, but to fashion them, or make them over, after our method. Schools are not organized to make study easy, but to make it easy for the teacher to give instruction. The teacher does not like a noise when he is talking, he is annoyed if any one speaks or moves; hence children are forbidden to ask questions, to talk with one another or to move about. The school does not reply to questions which the life out of school leads children to ask; it does not provoke questions of any kind. It answers questions which for ages the human race has asked, questions of little interest to children. How was the world created? Who was the first man? What is Asia? What is the shape of the earth? How are hundreds multiplied by thousands? To questions which his own life prompts him to ask, the child gets no reply, but that according to the rules of the school he must not open his mouth to ask to go out, but must make signs lest he disturb the teacher. Among the reasons cited for the almost total lack of useful results of school instruction are the efforts to make instruction uniform and mechanical, to arrange things in a manner, and according to a method that may serve for every teacher and every pupil, and the throwing of children into a "school trance" (*état scolaire*). This last condition, universal in schools, though little recognized by teachers, is described as consisting in stifling all the higher faculties of imagination and creative power to give place to the semi-animal faculties of apprehension, memory and attention.

To the statement that the schools of the present time have been elaborated by historic evolution, Tolstoi replies that schools and teaching have not kept pace with other means of instruction, and that relatively with other organic parts of the state, schools are lagging in the rear. The school of the middle ages, circumscribed as it was, filled better the function of a school than the schools of the present day do. Schools have not developed the people but have been developed because the people have developed, and as the development of the people advances the more instruction withdraws from the school into the paths of general progress. This will go on until the content of the school has been reduced to nothing. Extended commercial relations, ways of communication, the participation of the individual in the affairs of government, museums, public libraries, courses of lectures, not to mention printing which alone supplies the means of knowledge, separate by a vast interval the schools of the present from the schools of the past.

A science of pedagogy, he believes not only does not exist but is forever impossible. "The present generation does not know what is necessary for the perfecting of man, and if it did, could not impart it to the rising generation. The knowledge of good and evil exists in the whole human race independent of the power of man, and is developed spontaneously in the course of historic evolution; it is as impossible by instruction to engraft our conscience upon the next generation as to take from it the particular conscience and the superior degree of conscience that the preceding stage of development has brought to it.

Instruction is an evolution, and therefore has no final end. It is an act of man based on the need of equality and the invariable law of progress. The mother teaches her child to speak that they may understand each other. Instinctively she tries to descend to his manner of looking at things, even to his baby talk, but the law of progress does not permit her to descend quite to his level, and forces him to raise himself to her. The same relation exists between the writer and the reader, the school and the pupil, the government on one hand and the people on the other. The action of him who instructs tends to the same end. The science of instruction has for its one object the study of the conditions which favor the meeting of these two movements towards a common end, and of those which hinder it."

Count Tolstoi concludes this part of the book by saying that he knows his arguments will not convince the public; that his fundamental conviction, that the sole method of instruction is experience, and its only criterion liberty will sound to some like a commonplace, to others like an obscure abstraction, and to others still like an unrealizable utopia. Nearly a generation has passed since he wrote, and he has many readers to-day who belong to neither of these classes. There is even a small number who find that he has strongly expressed convictions which have been slowly forming in their own minds.

ELLEN M. HASKELL.

École du Livre.

This is a new school founded by the city of Paris for instruction in everything involved in book-making. It was proposed by M. Hovelaque, and is directed by M. Magnuski, who prepared for his work by some years of study and travel. It is a day school from eight to six p. m., with two meals, and receives boys of 12 who have finished the lower primary school. About 100 were admitted the first year from 300 applicants on a competitive examination. There are 17 courses in all including type-casting and setting, drawing and engraving of various kinds, binding, etc. Chemistry, *e. g.* is taught, but not at all as pure science, but only so far as is necessary for ink-making, photography, etc., and art is entirely subordinated to its application, etc. The first year all the studies are hastily passed through and the pupil then concentrates along the lines of his tastes and aptitudes. A very large new building is being erected as the permanent home of the school on the Rue Vauquelin. The instructors in the school were appointed by competitive examination under a jury named by the candidates. The photo-engraving school at Vienna, the city type-setting school at Barcelona and the admirable Plantin museum of all the tools and processes of book-making will all be excelled, if the museum of the new school is completed as planned. The school has been very quietly inaugurated with very little talk and no theorizing save that modern trades are narrowing and a workman is better if he know something of all parts of his trade, and knows a little of its larger, scientific, social, industrial and hygienic bearings.

Le Prix de Rome.

This a prize awarded by competitive examinations to native Frenchmen under thirty, by which one painter, one sculptor, one architect and one musician are annually sent to Rome for four years. It is a government prize dating from Louis XIV. and yields to each student over seven hundred dollars a year, payable monthly, besides traveling expenses. The examinations are severe and rigid. The preliminary examinations last from seventy to one hundred and twenty days. Those selected here pass a second examination of two days locked in cell-like cages. At Rome they cannot marry or work for money. All twenty of them live together an ideal life of the days of Lorenzo, The Magnificent. They dine at a common table, but each has his chamber and atelier. The social life is like an ideal gentleman's club, and everything in art in Rome is freely opened to them. They not only keep up the spirit of the modern French school, but influence even young Italian painters. France, Belgium, Germany, Russia, Spain and other countries have established similar schools in Rome.

Fifteen hundred American art students were enrolled last year in the studios of Paris. The author pleads for a national art school in this country, government prizes of money and an American Villa Médicis at Paris for prize students. Each congressional district should send candidates, and each prize student should furnish annually a work of art for our public buildings, galleries and parks.

The Pedagogical Museum of St. Petersburg:

A brief history and the latest report of which lies before us, was established in 1870. It is governed by a committee composed of university professors and citizens of high rank, and is under the immediate protection of the Czar and Czarina of all the Russias. The date, hour, minute and second of her majesty's visit to the institution some years ago, is inserted on a marble slab in the hall, by order of the Minister of War. Its character presents unique features. The collections fill several large rooms, and consist of many sets of pictures, often in colors illustrating Russian history and ethnology, costumes, industries shown by small human figures under glass, ideal geological landscapes, facsimiles of old documents and seals, scientific material, picture books in large numbers etc. The regular normal course lasts two years. Forty male interns sleep and board in the building, teach under supervision. Their smoking room. the room for individual tea-making, the lamps on each desk in the practice school to light both ends of the short midwinter Russian day, the magnificient singing of forty male voices, which forms an important part of the school course, all these made upon the writer during a recent visit, an impression as unique as it was pleasant. All the collections are kept up and enlarged on a grant of 1000 roubles per year.

The winter courses of lectures held here are of the highest character, and by the scientific leaders of Russia, and the room which probably seats less than five hundred is usually full, and a fixed per cent. only of the tickets are free. Concerts, music-classes, courses of lectures for the people, for soldiers, military and other classes of students are held. Here the powerful and important society for promoting family education under the patronage of the renowned princess Ekaterina Michailovna, meets as well as the sanitary society of the city and female students of the higher institutions. The desire to attend nearly all courses or meetings held is very strong, but the authorities limit the attendance so as to prevent a crowd. Russian literature and life are the most popular of these courses, and next comes technical processes. All the resources of the museum are at the disposal of the lecturer, and here is the chief point of contact between the Russian savant and the people. In this respect we have here an analogue of the public courses of the French faculties. Its usefulness is great to student, teacher and the public, and nothing like it exists elsewhere in Russia. The loaning of apparatus to other institutions which was the practice so long as the museum was meant to be in any sense a central depository of instruments, has been limited if not discontinued.

School life in relation to growth and health, by **PROF. AXEL KEY**, Stockholm. Address before the International Medical Congress in Berlin, 1890.

The commission of which the author is a member, and which was appointed just after the appearence of Dr. Hertel's important study in Copenhagen in 1881, has weighed and measured 15,000 boys from the middle schools, and 3,000 girls from private schools, and examined them as to health. The results show that boys pass through three distinct periods of growth; a moderate increase in the sixth and seventh years; a weaker growth from the ninth to the thirteenth years, and a much more rapid increase in height and weight from the fourteenth to sixteenth year. The growth of girls is also periodic, but comes a few years earlier than boys. Swedish pass American boys in height and weight in their nineteenth year. The period of rapid growth begins earlier with well-to-do than with the poorer classes, but is more rapid with the latter. Malling-Hansen found that children grew little from the end of November to the end of March. From March till August they grow tall but increase least in weight, and from August to November the increase is mainly in weight and height is least. During this latter period the daily accession of weight is often three times as great as during the winter months. All this bears directly on vacations.

More than one-third of Prof. Key's boys were ill or had chronic maladies. Thirteen per cent. had habitual headaches. Diseases of the heart and intestines increase in the upper classes. At Stockholm seventeen per cent. of the children were ill at the end of the first school year. The illness-curve rose to 37 per cent. and in the fourth class to 40. Illness periods coincide with periods of weaker growth. The healthiest year with boys is the seventeenth, which is also the year of most rapid growth The eighteenth is unhealthy. Among the girls 61 per cent. among the well-to-do classes have serious chronic disorders. Thirty-six per cent. had chlorosis, and many habitual headache, and ten per cent. spinal disorders. These were also mainly school diseases, induced chiefly by sitting still and in general by organizing girls schools after the pattern of those for boys.

Biologiseche Zeitfragen, *Schulreform*. W. **PRIEGEN**, 1889.

Pedagogy must now be at bottom physiological. This is now the watchword of the new modern christianity, which has too long been repressed by the materialistic heathen classical view. A patient would hardly trust a doctor who could make facile translations of Euripides. Much in even Goethe and Schiller is no longer consonent with modern Germanism. A critic complains of these views, which, it is said, leave us to infer that the only literature really German is physiological, or a chauvinism which tends to alienate even the friends of the proposed school reforms.

Education et Hérédité. Etude socialogique par M. **GUYAU**. Paris, 1889.

This posthumous work of the brilliant author assumes an apparent antinomy between education and heredity, which must be overcome by suggestion, a term borrowed from hypnotism, which is able to create artificial instinct, and thus represents a force hardly inferior to heredity. Education is defined as the ensemble of co-ordinated and reasoned suggestions. The power of habit, the illusion of freedom, the origin of the ego, are forms of permanent suggestion. Education is a form of morals, and seeks the means of harmonizing the most intensive individual with the most extensive social life. Yet morals are chiefly a form of social life, for although the individual might form an embryonal sense of obligation, the latter takes a totally new and larger form when considered from the social point of view. Education, then, must facilitate the passage from egoism to altruism and "loyalism."

Die Natürliche Erziehung. E. HAUFE. Meran, 1887. pp. 240.

Classical philosophy is not destroyed by natural education, but simply withdraws from preparatory schools to take its place in the University with Hebrew, Sanscrit, Assyrian, etc. The cosmos began with physico-chemical elements and processes; with physics and chemistry education should also begin. After the study of inorganic nature should come biology, physiology, etc., as organic life was evolved later from lifeless elements. The highest cycle and last phase of creation is psychological, and in this education should culminate. Thus the curriculum should epitomize and reflect the "world-work." Each stage should not only connect with the lower preceding, but should continue and enlarge and expand it. In the third or psychological stage, *e. g.* not only biological principle should all be continued and expounded, but physics and chemistry should be kept up in their most advanced phases to show how every vital process bottoms upon them. Even morals are best taught not from history but from the law and order of the inanimate world, and the "rights and duties of fluidity," which are elementary and will appear from sympathetic study. "Water forever does its duty in the service of nature and man," etc.

EDITORIAL.

Education is the one thing in which nearly every one now believes. No matter how widely men differ in race, sect, party, rank, wealth or culture, the contemporary world unites in faith in the efficacy of curriculized knowledge to prevent relapse to barbarism and ensure general progress and individual success. Even in remote, and till lately barbarous lands, Madagascar, the French colonies in North Africa, in Australia, south and east Russia, the South American states, Japan, Finland, Egypt, etc., schools in amazing numbers are completing conquests, propagating European culture and uniformatizing the sentiments and knowledge of the world and stimulating, supplanting or fusing with vast systems of indigenous schools, as in China and India (p. 277-9). The state of science more and more determines military and industrial supremacy between nations. In 1806, when Germany was almost annihilated by the battle of Jena, she adopted as her only means of salvation, the policy of becoming "The educational state of the world" as Fichte said, and made the training of the young the chief problem of statesmanship, and has become since Sedan the strongest military power since ancient Rome. The growth of several of her chief cities has equaled the fastest records of this country, and the rapidity of the development of Prussia in trade and industry in the last two decades has been no less astonishing. After the disaster of 1870 France deliberately adopted the same policy, and since 1876 has effected the most stupendous reconstruction of her lower educational system ever achieved in so short a time. The fact that she has increased her educational expenses nearly seven fold in 15 years shows this without the necessity of details. Nearly every country in continental Europe has profoundly modified and improved its educational systems since 1870, a date which is the Anno Domini of contemporary educational history. This country now spends $171,000,000 per year upon its schools, with 378,000 teachers, exclusive of nearly $11,000,000 spent annually upon our 415 colleges and universities, more than is spent on any other branch of the public service. Not only are sciences like chemistry, physics and geology coming to underlie and control all the arts of peace and war, but others like biology, astronomy, psychology and anthropology are coming to underlie and control all our religious, philosophical and moral conceptions. Legislative bodies, great corporations, all the professions and trades, in short the entire modern world is coming to be more and more in the hands of experts and specialists educated to the very frontier of their subject. Education is the catholicism, the church universal of to-day, and it is far more. Its *semper ubique et ab omnibus* is not a dream but a fact, not a cardinal doctrine but an institution which controls its votaries, not part of one but five or six hours for five or six days per week.

It is not strange that so grand an institution should become of itself an object of love, pride and inspiration; that there should be rivalry in mechanical excellences like attendance, punctuality, order, percentages, etc.; that in Austria and Russia teachers should like to wear uniforms as government officials; that reformers should be feared; that there should sometimes be tyranny and jobbery. Especially here where supervision itself is little skilled, and where one-fourth our teachers leave the business each year there is peculiar danger that the individual pupil will be subordinated to the school machine, for this is the chief vice of the 'prentice hand and of bad teachers generally. In France an account has lately been published of a class of a dozen average boys who were taken through the entire six years' course of the Lycées in less than three years, and without extra hours of work, by more efficient and well adapted teaching as applied to groups and to individuals. One needs little of the refinements of the author of "The Education of a Prince," where he discusses the fit of every physical, moral and mental trait of the teacher to those of his one only pupil to see that the best for boys and girls, as now increasingly understood, differs in several important points, or that the same system, method, and matter is not equally well adapted to the different classes of society and abilities and nationalities often found in the same room. The differences in pace of work, in the fatigue point, in moral disposition and fit method of treatment are vast. School ventilation is confessedly an unsolved problem. There are many school-bred diseases. Eyes, brain, chest, spine, digestion, may suffer, and the full development of some part be arrested. Hertel and Key (pp. 117 and 245) found one-third the school children of a large city more or less ill. The pressure of the system may drive gifted children to suicide as shown in the sad Berlin report. It may go to seed in methods so belabored that idiots, and perhaps, as a pedagogue lately predicted, intelligent animals may soon be educated by them, but correspondingly slow and stultifying to every bright or even average child. It may breed Tolstoi's *etat scolaire* or school state of mind (p. 113). It may cram with information so trivial and disconnected as to worry and excite rather than to give the repose and calm real culture yields. These evils involve each other and need a strong and constant effort of professional skill and of philanthropic fervor to hold them in check. Indeed the mutilation which so powerful an engine as the modern school *may* inflict upon the tender souls and bodies of our children, and thus upon our entire national future, is too little realized. Let us hope it will not bring a sick or sterile epoch upon the world as catholicism is sometimes said to have caused the dark ages.

The only safety lies in the study of and better adaptation to the nature and needs of childhood, to which this number of the SEMINARY is devoted. Strength lies in individualization. This means that there are many subjects of study equally valuable, many species of schools and universities equally necessary, and as many methods of instruction as there are kinds of children. Verbal work is best for those who are ear-minded (pp. 252-3), or mnemonically gifted; object lessons for the eye-minded, who are more numerous; manual training admits still another order of natural gifts. Progress is now in differentiation. The more parallel courses, electives, groups and institutions the better, provided only they are good and thorough, and really distinct and individual. Even the modern examination system is of recent origin, and men existed before it. As Paulsen well says (Proc. of the

Berlin, Dec.,p. 90, Conference, p.596)Goethe, Schiller, the great philologists and philosophers before 1820, were never examined. If youth did not learn at the university the injury was theirs. There was some trust in instinct, nature and free growth in the forest as well as in the monotonous rows of the nursery, and more freedom for both pupil and school. Why, I ask, should not a child leave school at whatever stage with better and not worse health than he entered, and with better knowledge of his own individual tastes, aptitudes, strong and weak points, rather than with less self-knowledge than before .It is the victims of cram and falsely understood "general culture" who have realized no special inner impulse, who are the jacks of all trades, the serfs and pariahs of the modern world of both business, industry or culture. No one is so able he will not fail if he attempt the wrong thing or too much, or so feeble he will not succeed if he strike his vein or can focus sharply enough. Hence now the great movement to study and adapt courses to the varying contents of children's minds on entering school, to observe them in school, to set off the slowest to a special school for dullards as in Germany, or recruit volunteer outside teachers for them as in Russia, that the feeble may be kept from pauperism and the vicious from crime; hence Real's plan of "homogenous classes," (p. 275,) all anthropometry, (p. 225), and medical tests. Fatigue in all its many forms, (p. 254,) adolescence, as so ably characterized by Dr. Burnham, the methods of the Worcester Normal school so efficient, as Mr. Russell says, in diverting the young teachers from excessive attention to the school machine to interest in individual children, the re-basing of religious training upon nature, (p. 196,) studies of the lies and other faults and the spontaneous play of children, the many special studies now needed of their anger, imitation, friendship, precocity, bashfulness, the singled queer or exceptional children, etc.,—every effort of this sort, every well kept vocabulary, set of regular weighings and measurings, drawings, every parent or teacher's book, every school anthropological cabinet, or physician's chart or health book *may* have real value for science, will more likely be of much practical value to the child, and is surest to educate most of all the record-maker. Thus we may make the education of our children our own education.

Every educational reform has been the direct result of closer personal acquaintance with children and youth, and deeper insight into their needs and life. The great teachers of the world lived with their pupils and loved and studied them. Fröbel advised that when a child was born each parent open a "life-book" in which should be recorded the stages of growth, faults, defects, illnesses, good traits, their own endeavors and motives. It should be kept without the child's knowledge and given him at maturity as a guide to his choice of calling, regimen, etc. In the French schools each child in the lower class is given a blank book called *cahier des devoirs mensuelles*. This, the first day of each month, is given the child who must be especially dressed and washed, and in it he records the figures, sums, writing, drawing, etc., constituting all the lessons of that day. This book never leaves the school house, and when the child's school days are ended it is deposited in the city hall. It serves as a record of the child's progress, takes in part the place of an examination, and is a great stimulus. In several European countries physicians, paid for the purpose, periodically examine every pupil's eyes, audition, nutrition, chest, etc., and note any suggestion for easement of studies for the teacher, and suggestions for a modification of food or regimen for parents, etc. Growth seems to focus on special years and even months (p. 117, 245–8;) not only adolescent parts and functions but hand and arm centers as well as those of the senses, vocal apparatus, legs, color, number, form, etc., may have "nascent periods" (p. 242,) the too early education of which means arrest, and the too late training of which is waste. The school day has its marked rythm of fatigue. These things alone are so constant, and so related to vulnerability to disease and to the power of effort that when fully known they must condition courses of study, daily order of exercises, vacations, buildings and all else, and are sure to soon give education a scientific character it has never yet known.

The pleasure of exuberant well-being which health gives would probably appear, if we had a scale to weigh or measure happiness, a greater pleasure than the gratification of any sense or ambition. Health is the condition of all success and nothing can atone for its loss. The art of keeping our bodies always to the very top of their condition is thus the art of arts in which so many sciences culminate. *Valare est philosophari*. At 40 each man is usually an invalid, a philosopher or a fool. The muscles are the only organs of the will, and have done all the work man has accomplished in the world. Every act of thought or sentiment is probably recorded in changes of muscle tension. All exercises that strengthen and enlarge muscles strengthen and enlarge the nerve and brain fibres or cells. The relief of very slight chronic ailments of body in children often suddenly augments mental power. It was a great step when education slowly passed from memory cram to object lesson methods, but we now witness a greater change of base from receptive to active methods. The projected "New German School" greatly increases health favoring conditions, which five or six sedentary hours a day indoors, with the chief strain on the eye, and the tiny pen-wagging muscles and the rest inert and flabby, did not. Every child has the right to the fullest and most vigorous physical development of which it is capable. Food, air, exercise, dress, sleep, and all school work should be means to this end. Eye, hand, chest, back, as well as head should be daily brought up to just that point of fatigue most favorable for increase of strength. How is the maximum of health and energy attained? In these days of physiological psychology it is seen that the most perfect physical development involves the choicest knowledge, the best morals and religion. He who is true to his body, which is the temple of the highest, cannot be unfaithful to his soul.

Besides Health and Specialization the third key word in the education of the near future I believe to be, Religion. By this I mean nothing in the sphere of any special creed or cult, but the sentiment of reverence, dependence, acquiescence in some great consensus concerning ultimate problems. Just in proportion as a man has made himself really effective in one direction he will accept his own instincts and the concurrent faith of others in other directions; will not attempt tasks too arduous for his powers, or open problems he cannot solve. This atonement is physiological economy; it is rest, health, strength. As the unconsciousness of a child is rest in God so the instinctive in a man's own soul and nature beneath all are felt to be lawful and beneficent throughout. Mr. Bigg (p. 279) proposes a canonization and curriculization of the best English literature into a British Bible to be made the bases of not only school reading, but of studies generally. In India, Mohammedans, Buddhists and Christians are striving to make a religious text book for school use that shall offend no one and inculcate the basal truths of each; an attempt which American protestant sects have repeatedly made and failed in. It is a cherished American method to keep religion out of primary schools and favor denominational colleges, but in Sweden, Austria and Russia the clergy have or are likely to have chief control of lower schools and only academic grades of education are independent of religion. How this comports with the observed nature of childhood and youth is discussed in Art. V, p. 196 *et seq.*

This number of the SEMINARY is indebted to Hon. Wm. T. Harris, U. S. Commissioner of Education, for the loan of many volumes of foreign educational reports, and for valuable statistics, and many other friendly offices of the Bureau of Education; to Dr. Klemm for many of the items in the Foreign Miscellanies, to Jonas M. Libby, Esq., former editor of the Princeton Review, for permission to reprint from that Journal the American part of Article II, and part of Article IV, and to Mr. Samuel Thurber for a careful revision of the proof of nearly all of this number.

Peda Seminary
V. 1, May (?), 1891, pp. 127- 38

NOTES ON THE STUDY OF INFANTS.[1]

BY G. STANLEY HALL.

The prenatal life of the human being has commonly been thought to begin about the middle of the 40 weeks of the intra-uterine period. Preyer[2] thinks that the first movements (and therefore the will, which he thinks is bound up with these in its development) whether auto- or allo-kinetic, originate about the sixth week, but legal medicine places this date much later, Luys insists that the fœtus belongs to psychology; Ribot thinks unconscious psychic life begins here; Kussmaul emphasizes prenatal tactual experience, and suggests that sensations of hunger and taste may be stimulated by swallowing the amniotic fluid. Visceral comforts and discomforts (euphoria and disphoria) have been suggested, and the child may have experienced different forms of pleasure and pain before birth. The experience of the unborn child however, under conditions of nearly uniform pressure and temperature, is of course extremely limited. Although consciousness, so-called, may be a matter of very many degrees, it is probable that motility precedes sensations. Bastian thinks there is usually a rapid evolution of fissures and convolutions three or four months before birth. Of the cerebral nerves, taste seems physiologically first, and infants prematurely born seem to distinguish sweet and sour. The retina seems developed enough before birth to mediate visual sensations, and muscle feelings may have been experienced, while the action of anæsthetics on embryos, and even the new born, is very feeble.

The effect of exhaustion, anxiety or shock, on the part of the mother in causing anæmia, prenatal convulsions and general metabolic changes, though now much questioned in detail, is very great. Not only among all civilized but among all savage peoples, as Ploss has so well shown, the hygiene of women approaching maternity has been an object of great care. Very diverse ceremonials have been devised. They are isolated, protected from evil influences, and all turbulent impressions, all their whims gratified, each day is thought to be sacred to the creation of a part of the soul or body of the child, and the nine months of gestation have been a soil of marvelous richness for superstition. The rate and amount of the movements of the unborn child reveal to the thoughtful mother much of the character of her child before its birth, while her influence upon her offspring is perhaps never so great. The mother might often say to the nurse, you can tell me nothing about the disposition of my just born child. Not only her regimen generally, but her movements, whether sudden or violent, or habitually calm, tranquil and regular, are probably all registered in the primitive language of touch as surely as a planchette responds to faint unconscious cerebration. Even more than in the early period of infancy and nursing everything that affects her affects the child, so that she does most for her child who does most for herself. Hence perhaps women are more prone to believe in rapport, and in influences and ties of a somewhat mysterious nature, not only between parent and child, but between friends, than men.

---

[1] For the literature on this subject see the author's Descriptive Bibliography of Education, p. 85, et seq., where all the important titles on the subject up to its date were brought together. A few additional titles should be named here. The Baby's Mind, a series of articles in *Babyhood*, beginning July, 1890, by Elizabeth Brown, M. D. The Scientific Observation and Study of Children, by Mrs. Helen Adler, N. Y., 1891. Blanks and Syllabus of Instructions for the study of children by Mr. N. A. Calkins, Superintendent of Primary Schools in N. Y. City. Life History Album by F. Galton, and published by the British Medical Association.

[2] Physiologie des Embryos.

Birth is an epoch-making change even if the child does not really suffer. It passes, as Perez says, from a torrid to a frigid zone, and its senses are battered by strange shocks. It cries and gasps like a mariner cast prostrate, naked, tired, on a strange shore, by angry waves. Respiration commences very irregularly from once in one to once in 10 to 20 seconds. The ears do not usually functionate at first, one or both eyes are often closed or nearly so. The child's motions are in freer space and the muscles of sucking, swallowing, breathing more and far greater, its dermal impressions more differentiated, active. Its first act is a cry, not of wrath, as Kant said, nor a "shout of joy," as Schwartz thought, but a snuffling and then long, thin, tearless å—å with the timbre of a Scotch bagpipe, purely automatic but of discomfort. With this monotonous and dismal cry, with its red, shriveled, parboiled skin (for the child commonly loses weight the first few days), squinting, cross eyed, pot bellied, and bow legged, it is not strange that, if the mother has not followed Fröbel's exhortations and come to love her child before birth, there is a brief interval occasionally dangerous to the child before the maternal instinct is fully aroused.

The first centre of the child's psychic life is the mouth. The movements in sucking and swallowing are first co-ordinated, and taste is perhaps the first developed sense. Two infants to whom I will refer as B, a boy, and G, a girl, were interested for 15 minutes at a time with a rag wet with sweetened water during the first week after birth. Almost the last movements on going to sleep and the first on waking were sucking movements, most that could be called desire, or pleasure or pain, centered about food-taking. A touch not only on the mouth, but on chin, cheek, or even neck or forehead caused sucking movements, the distance varying directly as hunger or pre-occupation. Later such touches also caused the head to turn to bring the mouth to the point of contact. Sucking movements were very strong, with eyes set and hands alternately clenching and opening. The chief movement of the arms seems mouthwards. Its face is often struck and scratched involuntarily by the infant's own hands. They are stuffed into its mouth, where everything it learns to grasp goes. Even large and the most unedible objects are not known till they reach the mouth, which is the centre, not only of taste, but of a tactile pleasure truly æsthetic which arises from bringing smooth things to the lips and hard things to the toothless gums. At first, *e. g.*, with artificial feeding the nipple must be well in the mouth, and perhaps the taste of the milk actually felt before it is recognized and the hunger appeased, then its touch on the lip or face, then the touch of the bottle in the hands, then the sight of it if white and full of milk, then the sight of the bottle alone, then of the milk alone, of both further and further off, then of the dish the milk is warmed in, then the putting on of the bib, etc., are recognized, as the centre of the infant's first and chief interest widens with its experience. Slowly and awkwardly the co-ordination between approximating things to its mouth and opening it are learned. First the sugar *e. g.* must touch the lips, then must be grasped and on its way to the mouth, then seen, etc. When given an apple the skin of which he could not break, but with a small piece cut off on one side, B. would place it against his mouth and roll it aimlessly about till the lips touched the broken skin. Every desire is attended by opening the mouth and by arm movements, and in the second and third year dirt, coal, flies, etc. are eaten, and larger, harder objects bitten and chewed.

Another chief centre of earliest psychic life and interest is the light-sense. B's right eye opened wider than the left for a day or two, and for more than 24 hours after birth it was impossible to tell the color of G's eyes. Both were cross-eyed, there was distinct incoordination, and the chief motion was right and left and but very little up or down at first. The second day, when a lamp was set 90 degrees to one side, B. would turn eyes and then head, as he lay, toward it in the course of a minute or two. Congruent movements of the upper lid and head upward and downward with the eye came later, and of the brow later yet in both B. and G. The first week the iris contracted to light, but no accommodation for a near or far candle could be detected. In the involuntary bobbing of the head and rolling of the eyes very bright objects were sometimes accidentally encountered, and once by chance the first day of life B. met a direct ray of sunlight. There was a slight shock of surprise, a blink and flitting scowl, as the head bobbed away, but apparently no pain. Unconscious of its own movements, it was as if objects or impressions suddenly sprung upon the sensorium. Often as the eyes and head turned from a dark corner or object to the sunny window, a start of surprise and sometimes signs of fear were seen. Next to a light in a dark room, the mother's face was the first object that had any power to hold the wondering gaze. Later, when an object while gazed at rolled away or dropped from the table to the floor, it ceased to exist, as it did also if the head gave a lurch or a piece of paper was laid over the object. So too the hands and feet of both B. and G., if they moved out of the field of vision, could not be found. The retina is at first imperfect in both structure and function, and vision is probably first adapted to near objects and with little perspective, and to look is harder and later than to see. First comes the power to fixate an object, then (about the 14th or 16th week for B. and G.) the power to follow a slowly moving object in all directions, co-ordinating eye, head, lid and brow motions. Eye, hand, head, body was the order of learning to move at will towards a desired object. Up to the 15th week a threatening motion towards and close to B's eyes did not cause winking, while touch in a wide radius around the eye causes it very early. The fiftieth week he tried to pick large letters off the paper on which they were printed, but a little later seemed rather suddenly to understand pictures. Twilight was dismal, gaslight exciting throughout the first few years. In the ninth week B. had not learned to extend the hand toward a desired object of sight. At first the centre of movement of each hand, or what I may call its *primary position*, is considerably on its own side of the median plane of the body, but the *chief sensory focus* is slowly developed and defined. This designation I apply to the point in space in the median plane where both hands and vision can best combine their action on an object. It is somewhat below the so-called primary position of the eyes, where objects tend to be brought to be seen and felt at once to best advantage, and where the relations between sight and touch are best and fastest learned. Very many motions of hands and body tend to bring all objects to this point almost as persistently as earlier things tend to be brought to the mouth.

The first motions were chiefly from shoulders and hips; elbows and knees, hands and feet come later. If movement of limbs were restrained, there was great discontent, and great pleasure in flinging them aimlessly about, often striking eyes, nose, etc., till the child cried. Perhaps the new freedom of movement just after birth may excite or fatigue in weakly children and swathing may sometimes have not only therapeutic but prophylactic value. Growth in function seems to be irregular, and now in this and now in that direction. Carefully made and recorded observations of B. and G. led the writer to conclude that there were periods when symmetrical movements of both arms and legs, and others when independent and unsymmetrical movements of both predominated. For some weeks in the first half year the favorite motion of the legs was pounding the floor with the soles of both feet at once, or better yet, the wall of the room or any vertical object as if anticipating pressure on the feet in walking. In both B. and G. there were several months of decided left-handedness, when with a tempting object on the table exactly in front and both hands released at the same instant, the left would nearly always grasp the object, and yet distinct right-handedness was developed later in both. If the unity of sensory impressions required it, there is no reason why hands and arms should not have learned to move as symmetrically or congruently as the eye-balls, or the latter to move independently like hands, as they do in animals with eyes so wide apart as to have different fields of vision. When the hand could only grasp objects reflexly, and before it could oppose thumb and fingers and pick up small things, if a desired object was seen which the hand tried to reach, but on the way another, perhaps very different and distant object was accidentally touched, this the hand would clutch reflexly, and could let go only by a distinct effort. It would stick to all it touched on the way to its goal. Later everything seen was reached for, save where inhibiting effort seemed often apparent. The power to bring the hand to the part of the body touched comes slowly, and of the parts less easily touched the child has little knowledge. If a bright object is slowly moved around behind the infant's head, when it is upright, it follows it as far as neck and eyes can turn, and then the object is lost. In the seventh month B. suddenly learned to then twist around the other way, but not nearly far enough, and it was months before he acquired any adequate knowledge of his back space. In assuming the vertical position, the child often lifted its head from the pillow; and when the child was held up, it needed much experimentation in balancing its head, until, in the ninth week, it could hold it upright, and not roll off its axis. In the early efforts to sit up it usually tipped over sideways with little attempt to save itself; in its first walking trials its falls were mostly forwards, occasionally backwards, rarely sideways. After it has stood by chairs and walked by the side of furniture and walls, its first few steps unsupported are eventful. The elbows are wide apart, the face set, the satisfaction at the end of the journey great, like the first small venture of a wire dancer. Before this, however, B. and G. had often walked a few steps at play, unconsciously and automatically; but two weeks after this first volitional or conscious walking B. walked nearly a quarter of a mile at once. He gave a thing already in hand at command some time before he could pick up and give; could climb into a chair before he could turn round and sit down in it. When learning to back off a bed he would turn around and back half way across it first; when first sitting on a stool lower than his wont, he would squat as low as his old chair, whine a while and then drop; could give things long before he could understand taking them; could run and be chased before he could chase; to nod, and shake head and hand at call were for some weeks often confused, as were later sir and marm, and even yes and no. If when cross he was told e. g., to give bread, he first started to do it mechanically, but then drew it back, and pushed my hand away, as if fearing that automatic obedience might get the better of volitional disobedience.

Like the association between sight and touch, that between vocal sounds and hearing is slowly acquired, and the ability to modify sensation by motor effort comes late. The auditory passage is not open at birth, but in a few days the child starts at a sudden noise and *listens* within the first few months, and soon shows great pleasure in some noises (most it seemed in kissing noises) and great displeasure and even fear at others. Its first thin monotonous cry, curiously in a lower pitch in G. than B., and sometimes sustained vigorously over 30 minutes, is soon differentiated, broken by ictus and hiatus. In a few days prelusive grunts, whines, gasps, sighs appear, and the noises of hunger, pain, anger and fatigue are soon clearly distinguished. Crying is often the chief and best exercise, strengthening lungs and larynx, warming after a bath, aiding digestion, etc. It would be difficult, even with Bell's phoic notation, or with a phonograph, to classify the first vocalizations of an infant. Experiences of pleasure soon come to differentiate more than those of pain. There is nothing immitative or onomatopoetic about them, and of course no impulse toward communication, but they are purely automatic. Every day there are new noises or variations. I distinguished 63 of these in B. before he was five months old, and heard nearly 40 of them made in a single morning when he awoke happy, earlier than usual, and lay in his crib. Several of these acquired a well-defined meaning, were caught by G. and persisted in long after the others had given place to conventional speech, e.g., ap=repulsion when things were thrown down; ahem=anything good; ugh=yes; eh = designating anything with pointing. Their noises were too well understood by each other, the younger holding the older back, and perhaps too well heeded by nurse and mother for speediest development of the power to talk. The vowels ē and ī were the latest, and r and s the latest consonants. Acts and things were the first objects verbally designated. Old baby forms of words very often persisted from habit, long after the powers to utter the word correctly was acquired, e. g., ewibub—elephant. Pleasure was often found in making all possible noises with variations of pitch, stress, etc., but whether for ears, voice or both, none can say. Often the talking of adults is imitated by prolonged jabbering, as later writing is imitated by prolonged quiddling with a pencil before letters are known. When told to say after me a list of words of two syllables, the first syllable was almost always repeated, e. g., Mary was wa-wa, always loudly spoken, for she was a big, loud-voiced girl, Julia = du-du; little = ĭh-ĭh; blanket = ba-ba; faster = fa-fa; master = ma-ma; pasture = pa-pa; naughty = na-na, etc., but G. from the first tried to differentiate all such syllables. Again in the mono-syllabic stage of speech each word is often repeated. New sounds, inflections, stresses, sound metaphors and "speech protoplasm" generally seems more abundant, and there is often more unrest just before conversational language begins its most rapid development and the soul takes flight in speech. None of the modern theories of the origin of language explains or is favored by psychogenesis. Even the terms reflex, automatic, interjectional, onomatapoetic, are inadequate and without explanatory powers. The individual child may epitomize in its stages of development the history of the race in speech, as in so many other respects ontogenesis summarizes philogenesis, but we can never know how far this is the case because the race-history in this respect can never be written. It is another common assumption that devolution reverses the order of the stages of evolution. Preyer, however, goes too far in identifying the typical stages of decay and of growth. He finds all forms of aphasia, and lalopathia transiently illustrated in the speech learning child, from the slightest pselism, paraphasia, rhotacism, to almost complete aphasia. To say that a child has alexia, apraxia, asemia, asymbolism, and amnesia, and slowly grows out of them through all the dyslalias, paralalias and lalopathies as if by a process of recovery represents imperfect observation of either children or aphasic patients. Aphasia in children as Clarus and others have shown is by no means a process of reversion. The ingenious attempt of Oehlwein to make an interjectional primer, of Rössler to exploit this element for deaf-mute instruction, classified infant vocabularies like those of Holden and Haldemann studies like Schultze's or Keber's on the order of genesis of vowel or consonant sounds, as well as Preyer's language chapters are but preliminary studies in a vast and newly opened field of rare promise for both psychology and philology. The child's linguistic development does not proceed from the easy to the hard, according to any adult standard, but the hard, and often the very hard, may precede the very easy. Many sounds not in our language, are made and there is a quite marked and most interesting period when the original language of the individual gives way to the acquired traditional speech. If told to imitate the speech of an adult the child gazes at the eyes and never at the mouth. "*Cook*"=cookey, *e. g.*, became the name for all solid food, and a book containing the picture of a cat was *meaw*, so all books, and a roll of cotton were meaw, etc., in the way so copiously illustrated in the literature of apperception. Possibly the first conscious communication takes place, as Fröbel thinks, when the mother first catches and holds her infant's eye by smiles, nods, chirps, and chucks its chin till it grins in its at first ridiculously awkward way and writhes all over with joy. It soon manifests self-consciousness whenever it sees another's eye is directed to it and often develops a passion for being noticed and showing off, till at one period nurse, mother, baby or at least dolly must look to see all the child does. The impulse to communicate orally and to be heard comes much later, and is often almost as strong a passion. There was very marked love of hearing adults talk even to each other as mere noise before a word was understood. There was also noticeable a stage in which the florid gesticulations and emphasis which accompanied speech declined as the latter grew adequate. The use of the pronoun I (=hi) was noticed in place of the third personal designations of self before the end of the third year in both B. and G. "I" preceded the use of "me," and both that of "you."

The skin seemed very sensitive at birth and to be very closely connected in its functions with all the somatic feelings and conæsthesias. Touch seems not only a mother sense from which others are developed, but a primitive language. Its sensitiveness to wet, temperature, friction, slight scratches, etc., is exceedingly great, as if the dermal senses were developed but concentrated before the expansion of the skin in growth. A few drops of cold water during the early days of life cause a greater shock of surprise than the sudden stimulation of any other sense, and later even a sudden touch often causes a start. In no way were B. and G. so readily put to sleep as by being "patted off" by nurse or mother by regular pats over the shoulder, especially if gradually slower and lighter. Too much holding, stroking, hugging, trotting, and even bathing easily fatigue, and tickling is especially injurious. Again, eye-knowledge of things is filmy and unreal and must always be verified and realized by touch. Hands and feet are known as objects, to be played with like other toys before the skin is known as outlining the boundaries of the physical self. To the order "give foot" there is a stage when the child tries to pick up its own foot and give it as it would a apple; and Perez' child was seen to offer food to its own foot at 22 months. Just what objects it knows in the dark by touch alone would be an interesting study itself.

Much of the spontaneous play of young children is manifestly co-ordinating their own senses with each other, and with movements and is therefore self-education of the purest and most rapid type. Where but one sense can reach there is little knowledge which requires for completion a paralax from two or more. B. while sitting on the floor early in the second year let a fork fall 52 times in the course of 15 minutes, and on another occasion struck a board with a wooden mallet 42 times winking each time at the noise. G. had no such noise-hunger which in B. suggested the "light-hunger" which makes partially blind children rub their eyes in the passion to stimulate the optic nerve. As the physical growth of children does not appear to be uniform in all directions but to focus now upon one function and now upon another, to be now rapid and now to be slow or to intermit entirely, so habits break out suddenly from no one knows where, grow irresistably strong and then die off and leave no trace, save perhaps in the better development of some function; so plays and toys come and go like fashions with adults. At one time everything that could be held must be struck against something else, or it must be dropped, or at one time thrown out the window. The car play was perhaps most violent and lasted in all several years. Everything must be placed in rows, chairs, foot-stools, books, dolls, stones, kitchen utensils, toilet articles, blocks, toy soldiers, and even bits of paper, everything that could make a series of things like or even unlike, especially if they could be pushed at one end, or tied and dragged to make a "chu-chu" or railway train. A boy's passion for animals is like a girl's for dolls. An elephant which B. saw being made of brown cloth, stuffed with cotton and with two buttons for eyes was his almost constant companion in bed or on rides, etc. It must be stood beside him to see all his play and games, was horse, dog, locomotive and pillow till three were worn out. B. loved *big* toys and G. *nice* and generally little ones. For a short time a straight iron stove hook was a favorite doll. A distinct and new pleasure was noticed when the hand found and could explore bags, pockets, etc., where the eye could not go. Passions for tearing paper, for turning a wheel, for swinging doors and gates, for putting things in other things, e. g., picking daisy and clover heads in a pail or spooning sand into it were strong with R. but soon passed.

Fatigue, which showed itself in more rapidly changing moods, frettiness, etc., was often relieved by a darkened room, a wonted crib from which exit was impossible and with the simplest oldest toys, where the child would play alone for an hour with perfect content after it had become intolerable in the excitement of the nursery. Up to well into school life B. was somehow more prompt, cheerful and exact in obedience if he was lifted and pulled about occasionally in play,—the mere application of the muscular'strength of the father having a salutary moral effect. Just as there are physical evolution series such as suck, bite, chew, lap; or sit, creep, stand, walk, run, jump, hop; or move hands, grasp, hold, oppose the thumb, etc., so there are moral series which go back to the very modes and motives of the mother before the child is born, are rooted in her instinct the later unfoldment of which seems often as marvelous as the child's development, and which are registered first the primordial language of touch, rythms, motions, etc., during the long period when her very presence suggests the realization of all possible desires. B. hated his cool baths, and the nurse talked, tried every diversion and heeded his every cry. The father once bathed him, silent, and heeding no cries. He at first screamed as usual, then was surprised that nothing that he could do availed, and in three days submitted without a whimper. He loved to parody disobedience in many ways as far as he dared. A command, do this, or do not do it, was regarded at first as a sort of trick, to be done for or in a moment. At first a command could be understood to hold for only a few seconds, and only very gradually with the development if the child's ideas of time could it be known to apply to longer and larger periods, and the idea of all day, to-morrow, never come very late, and the child's memory seems to be first from moment to moment, then from hour to hour, month to month, and only very late for life. So of space the child's obedience often seemed about inversely as the square of the distance, or the loudness of the voice, G. however, generally obeyed much further off than B.

Quite apart from changing moods, it seems as if obstinacy and independence, as shown, e. g., in running away, in breaking through well known prohibitions, love of novelty, impatience with old plays, etc., broke out in spells, like sudden new habits. Prohibition of forbidden acts was first taught by saying *no-no* and patting or snapping the cheek, then *no-no* with a touch, then alone was enough, then the father's presence and attention, then the mother's *no-no*, etc. At first *no-no* when understood seemed to sever the relation with the present and usually caused the effort and desire to kiss and be atoned. When G. was crying and a parent looked at her smiling a curious conflict of vocal noises soon occurred, half cry and half laugh, till in a few moments the mood was reversed and only the laugh was left. Nearly the same reversal occurred if when crying G. was told to *sing*, a merry trick she had learned. For a long time G. could not be out of sight of mother or nurse for a moment. She was powerless to amuse herself alone, and to see a door shut on her alone was like being shut out of heaven. To be out of doors was, however, greatly desired. The distance G. would permit herself to be taken from the back steps and creep to and into the door where the nurse stood, and not cry was inversely as fatigue and directly as growing and strength and good temper. The impressions of a new and strange room seemed greater than that of all out doors itself. The early interests were only in near things, and distant objects hardly existed. Not only were even parents not known at a little distance even without the estranging disguise of hat or bonnet, but there was at first no idea that the voice must be raised to be heard a short distance away, and later the voice was raised absurdly loud to reach a little ways.

Very marked were the differences between B. and G. The latter very early felt the influence of clean clothes, and especially of a white dress and put on her best behaviour with it. This was hardly noticed in B. G. loved nice, fine and especially soft things, and was much attached to her favorite pillow, spoke earlier than B., was far fonder of being carried, being amused, riding and passive states generally, was less interested in distant things, in self actively, and things that appealed to sight alone, but was devoted almost exclusively to things immediately about her. It took G. long to get used to new toys and games, and to fully enjoy them. She must talk of all she saw, did or was done to her, automatically even if attending to other things. This habit of mechanically saying what she was doing often attracted attention to forbidden acts. Being thus fully used to a set of acts she did not easily tire of repeating them, while B. wearied of everything and was always in quest of novelty. G. was more influenced by general surroundings and less interested in special things and less able to select them out for attention, used all she played with with great gentleness, was never destructive of toys like B. Her story passion was far less intense than B.'s, and she could not attend to a new object as long, but imitated words and acts better, had earlier and greater interest in colors Learning to blow may mark the first idea of action at a distance, and learning the action of a string, as e. g., to pull the watch from the father's pocket by the chain, the first idea of cause, but both these G. understood earlier than B. G. was more automatic, conservative and sympathetic than B., her noises and words always less rough and emphatic.

For a long time there was no trace of anything that could be called will. The loudest noise, the brightest light the fastest motion always drew the attention, and interest could be diverted from anything to anything else, about equally well. Every movement seemed either automatic or reflex, and the entire objective world seemed to have only a most hazy and intermittent existence. Latter, fatigue, dysphoria eliminated the external world in sleep, which at first filled nine-tenths of the time, while in spontaneous crying the world outside the child's subjective sensations is easily eclipsed and ceases to exist for it. The special sensations seemed to unfold out of general feeling,—*Gemeingefühl*—and the world of sight and touch, hearing and speech, and motion, etc., gradually differentiated into different object systems, and different senses were woven and meshed together like tender twigs of braided and intertwisted shrubs. To urge sharp adult distinctions here, and speak of synthesis of many ego's to imagine any sharp lines of cleavage between conscious and nonconscious, self and not self, thought and speech, apriori and aposteriori in the sense of deciding these old issues as commonly stated in favor of either party as opposed to the other can already be pronounced impossible and absurd. It is rather a new formulation of problems here that impends. The complexity of the child's nature even during the first three years is amazing, and only the laborious comparison of many special and painstaking observations can yield results of value.

Most of the best observations of infants trace them into the third year, or perhaps through it and there stop. The senses have filled the mind with impressions of primary and secondary qualities of matter, the disparate sensations and the at first independent reflexes are co-ordinated with each other and with movements, and volition has arisen out of automatism, and there have been but few careful and special studies of the second triennus of life. Child life has grown far too complex for most individual observers. It is the study of children of school age that is of most practical importance for pedagogy.

THE CONTENTS OF CHILDREN'S MINDS ON ENTERING SCHOOL.

By G. Stanley Hall.

In Oct. 1869 the Berlin Pedagogical *Verein* issued a circular inviting teachers to investigate the individuality of children on entering the city schools so far as it was represented by ideas of their environment. Individuality in children it was said differed in Berlin not only from that of children in smaller cities or in the country, but surroundings caused marked differences in culture-capacity in different wards. Although concepts from the environment were only one important cause of diversity of individuality, this cause once determined, inferences could be drawn to other causes. It was expected that although city children would have an experience of moving things much larger than country children, they would have noticed very little of things at rest, that to names like *forest*, *e. g.*, they, with an experience only with parks, would attach a very different set of concepts from those of the country child. The fact that country children who entered city schools behind city children caught up with them so readily was due to the fact that early school methods as well as matter of instruction were better adapted to country children. Conversation with children in collecting the statistical materials would, it was predicted, tend to interesting and surprising results. When asked what mountain (Berg) they had ever seen, all the girls in an upper class of a grammar school said *Pfefferberg*, the name of a beer-house near by, and for all, *Berg* was a place of amusement. This would cause an entire group of geographical ideas to miscarry. Others knowing the words *pond* or *lake* only from artificial ponds or lakes in the park, thought these words designated water holders, which might or might not have water in them. A preliminary survey showed that many children in each city school had never seen important monuments, squares, gardens, etc., near their own home and school-house, and few knew the important features of their city at large. With the method of geographi-

---

Vorstellungskreis der Berliner Kinder beim Eintritt in die Schule. (Berlin Städtisches Jahrbuch 1870, p. 59–77.

cal instruction in vogue that begins with the most immediate surroundings and widens in concentric circles to city, country, fatherland, etc., these gaps in knowledge made havoc. School walks and excursions, object lesson material, as well as the subject matter of reading, writing, etc., should be regulated by the results of such inquiry. This circular, which was accompanied by a list of points for inquiry, ended by invoking general and hearty personal co-operation. It was not sufficient to have seen a hare, a squirrel, etc., but the hare must have been seen running wild, the squirrel in a tree, sheep grazing, the stork on its nest, the swan swimming, chickens with the hen, the lark must be singing, the butterfly, snail, lark, etc., must be in a natural environment. The returns for 13 of the 84 schools of Berlin were worthless. Other tests suggested but not reported on, were colors, knowledge of money, weights and measures; how many have seen a soldier, sailor, peasant, jew, moor, or a shoemaker, carpenter, plasterer, watchmaker, printer, painter, etc., *at work;* how many knew how bread was made out of grain; where stockings came from; how many could repeat correctly a spoken sentence, say a poem by heart, sing something, repeat a musical note, had attended a concert, have a cat, dog, or bird, etc. As an essential object of these inquiries was to distinguish the concepts which children brought to school from those acquired there, returns made some weeks or months after the children entered school had little value, yet were worked up with the rest. The very slight interest shown by teachers in making these inquiries was also remarked. As only about one third of a minute for each question to each child was the time taken, there could be no collateral questioning, so that confusion and misunderstanding no doubt invalidated many returns.

The sources of error to be constantly guarded against are errors in counting, imagination, or embarrassment of the children. When the answers were taken in class nearly twice as many children asserted knowledge of the concept as when they were taken in groups of 8 to 10. Nearly half the boys and more than half the girls on entering school had never seen to know by name any one of the following conspicuous objects in Berlin: Lustgarten, Unter den Linden, Wilhelmplatz, Gensdarmenmarkt, or the Brandenburg gate. From the large number of returns, those from 2238 children just entering school seem to have been pretty complete for 75 questions; but other returns were usable for a part of the questions, and some for other questions, so that in the tables the number of children is recorded on the uniform basis of 10,000. Arranged in the order of frequency the first Berlin table is as follows:

1.	Dwelling,	9026
2.	Father's business,	8945
3.	Name of father,	8517
4.	Firmament,	8145
5.	Tempest (day),	7873
6.	Rainbow,	7770
7.	Sphere,	7623
8.	Two,	7435
9.	Three,	7399
10.	Four,	7265
11.	Hail,	7015
12.	Cube,	6957
13.	Potato-field,	6323
14.	Moon,	6215
15.	Swan,	6175
16.	Butterfly,	6028
17.	Clouds,	5925
18.	Fish,	5853
19.	Unter den Linden,	5590
20.	Menagerie,	5496
21.	Square,	5474
22.	Evening sky,	5384
23.	Hasenheide,	5121
24.	Frog,	5085
25.	Circle,	4991
26.	Snail,	4750
27.	Sunset,	4625
28.	Meadow,	4607
29.	Alexander Sq.,	4366
30.	Triangle,	4182
31.	Corn-field,	4062
32.	Zoölogical Gardens,	4057
33.	Frederick's Grove,	3887
34.	Herd of Sheep,	3870
35.	Pleasure Garden,	3861
36.	Forest,	3646
37.	City Hall.	3615
38.	Morning sky,	3592
39.	Squirrel,	3579
40.	Brandenburg Gate,	3467
41.	Kreuzberg,	3454
42.	Castle of King,	3423
43.	Village,	3374
44.	Tempest (night),	3347
45.	Mountain,	3248
46.	Museum,	3222
47.	Cuckoo,	3137
48.	Treptow,	3065
49.	Sunrise,	3052
50.	Gensdarmenmarkt,	2909
51.	Stork,	2887
52.	Palace of King,	2886
53.	Mushroom,	2855
54.	Oak,	2641
55.	Plough,	2636
56.	Sleet,	2493
57.	Moss,	2484
58.	Hare,	2466
59.	Stralau,	2453
60.	Harvest,	2368
61.	Dew,	2364
62.	Wilhelm's Platz,	2158
63.	Lake,	2078
64.	Arsenal.	1957
65.	Scotch fir,	1828
66.	Lark,	1796
67.	Reed,	1702
68.	Willow,	1667
69.	Whortle-berry,	1640
70.	Birch,	1318
71.	Rummelsberg,	1242
72.	Park for Invalids,	1135
73.	River,	1122
74.	Hazel shrub,	907
75.	Botanical Garden,	527

Thus, *e. g.*, out of 10,000 children, 9026 had the idea of dwellings, while but 527 had any idea of the Botanical Garden. The same returns otherwise presented are as follows:

	Boys.	Girls.	Children from Families.	Children from Kinderg'n.	Children from Refuges.	Children altogether.
1. Two	7478	7380	7436	8223	7113	7435
2. Three,	7478	7298	7418	7355	7344	7399
3. Four,	7279	7247	7224	8258	7067	7265
4. Triangle,	4274	4036	4078	5484	4111	4182
5. Square,	5424	5537	5230	7484	5681	5474
6. Area of Circle,	4750	5312	4818	6645	5081	4991
7. Sphere,	7684	7544	7576	8516	7483	7623
8. Cube,	6971	6970	6800	8064	7159	6957
9. Moon,	6043	6438	6067	8000	6144	6215
10. Sunrise.	3410	2590	3194	2710	2633	3052
11. Sunset,	4925	4237	4739	4516	4226	4635
12. Firmament,	8382	7840	8012	8645	8476	8145
13. Tempest (day),	7613	8209	7776	9226	7760	7873

	Boys.	Girls.	Children from Families.	Children from Kinderg'n.	Children from Refuge.	Children altogether.
14. Tempest(night)	3188	3509	3224	4194	3510	3347
15. Dew,	2331	2395	2455	2323	2032	2364
16. Clouds,	6090	5711	5727	6581	6443	5925
17. Hail,	6606	7544	7055	7677	6628	7015
18. Sleet,	2847	2037	2382	2194	3025	2493
19. Rainbow,	7708	7851	7667	9355	7598	7770
20. Evening sky,	5567	5148	5303	6065	5450	5384
21. Morning sky,	3497	3715	3545	4128	3580	3592
22. Hare,	2482	2446	2473	3097	2217	2466
23. Squirrel,	3878	3193	3170	4903	4665	3579
24. Stork,	3212	2467	2897	3290	2702	2887
25. Swan,	6757	5425	5976	7032	6628	6175
26. Cuckoo,	3545	2610	3048	4129	3118	3137
27. Lark,	2220	1249	1739	2258	1848	1796
28. Frog,	5551	4482	4879	6323	5427	5085
29. Fish,	6852	4565	5691	6968	6074	5853
30. Butterfly,	7128	4606	5503	8258	7229	6028
31. Snail,	4877	4585	4612	5484	5012	4750
32. Birch,	1531	1044	1339	1355	1229	1318
33. Scotch fir,	2205	1341	1770	2065	1963	1828
34. Oak,	2625	2661	2776	2451	2194	2641
35. Willow,	2157	1034	1703	1742	1501	1667
36. Hazel Shrub,	1055	706	927	1032	762	907
37. Whortle berry,	1792	1443	1564	2645	1570	1640
38. Sedge (reed),	1840	1525	1655	2581	1570	1702
39. Mushroom,	3204	2405	2539	3419	2610	2855
40. Moss,	2688	2221	2867	3355	1963	2484
41. Pleasure Garden,	4021	3654	3800	5032	3672	3861
42. Unter den Linden,	6122	4993	5436	6129	5982	5590
43. Wilhelm's Platz,	2696	1464	2345	1935	1524	2158
44. Alexander Platz,	4084	4729	4515	3935	3946	4366
45. Gensdarmen-markt,	3450	2221	2915	3032	2841	2909
46. Brandenburg Gate,	3885	2968	3388	4774	3303	3467
47. Castle,	3465	3367	3333	4192	3510	3423
48. King's Palace,	3180	2508	2788	3613	3002	2886
49. Museum,	3450	2927	2982	3935	3880	3222
50. Arsenal,	2165	1689	1855	2839	2032	1957
51. City Hall,	3703	3501	3412	5935	3557	3615
52. Frederick's Grove,	3600	4258	3915	2710	4203	3887
53. Menagerie,	5964	4893	5261	6516	6028	5496
54. Zoölogical G.,	4346	3685	3727	6323	4503	4057
55. Botanical G.,	452	624	497	1161	416	527
56. Kreuzberg,	4179	2518	3479	4065	3141	3454
57. Hasenheide,	5780	4258	5121	6194	4734	5121
58. Park,	1301	922	964	1355	1709	1135
59. Treptow,	3196	2897	3127	4065	2469	3065
60. Stralau,	2840	1955	2515	2387	2240	2453
61. Rummelsberg,	1459	963	1248	903	1339	1242
62. Drove of Sheep,	4005	3695	3739	4323	4203	3870
63. Corn field,	4322	3726	4012	4194	4203	4062

	Boys.	Girls.	Children from Families.	Children. from Kinderg'n.	Children from Refuge.	Children alto-gether.
64. Potato field,	6265	6397	6303	6323	6397	6323
65. Village,	3672	2989	3364	3419	3395	3374
66. Plough,	3283	1801	2570	3290	2656	2636
67. Harvests,	2744	1883	2315	2323	2587	2368
68. Dwelling,	9120	8905	9103	9355	8612	9026
69. Name of father,	8136	9007	8830	8065	7483	8517
70. Position "	8652	9324	9194	8968	7991	8945
71. Mountain,	3402	3050	3067	4645	3441	3248
72. Forest,	4036	3142	3555	4194	3418	3646
73. Meadow,	5004	4096	4467	4645	5127	4607
74. Lake,	2451	1586	2055	2000	2171	2078
75. River,	1126	1115	1194	968	901	1122

This table shows that out of 10,000 boys, 7478 on entering the Berlin schools have an idea of the number two, out of 10,000 girls 7380 have it, out of 10,000 children of both sexes indiscriminately, 7436 have it, etc. Here the concepts are arranged in systematic order. Mathematics, 1–8; astronomical, 9–13; meteorological, 13–21; animals, 22–31; plants, 32–40; local geography, 41–61; and miscellaneous. Of three fourths of these concepts as objects more girls are ignorant than boys, and those who had not been in the kindergarten were more ignorant than those who had. Some of these objects were doubtless known but had not acquired a name for the child; others they had seen but had not had their attention called to. It is often said that girls are more likely to excel boys in learning concepts the more general these concepts are. Perhaps we may also assume that the most common concepts are acquired before those possessed by a few individuals only. The greater the number of concepts in the test lists the more boys seemed to excel girls. The easy and widely diffused concepts are commonest among girls, the harder and more special or exceptional ones are commonest among boys. The girls clearly excelled only in the following concepts: name and calling of the father, thunder-shower, rainbow, hail, potato field, moon, square, circle, Alexander Square, Frederick's Woods, morning-red, oak, dew, and Botanical Garden. Of all the children the sphere was known to 76 per cent., the cube to 69 per cent., the square to 54 per cent., the circle to 49 per cent., the triangle to 41 per cent. The girls excel in space concepts and boys in numbers. Girls excel in ideas of family, house, and thunder storms, children from houses of refuge had more concepts than children from families, and those from kindergartens excelled both. The child's characteristic question, "what is that?" is so poorly answered at home that he comes to school so poor in concepts that instruction must either operate with words, or use pictures, orgo back to nature. Thus text books and other means of instruction assume a knowledge which the child does not possess, and it is hard to find those well adapted to a given population. Thus object lessons, excursions, etc., are suggested as first steps to fill the gaps in the child's knowledge.

The following table shows the relative number of children who knew four Bible stories and four of Grimm's favorite fairy tales.

	Boys.	Girls.	From families.	Kindergarten.	Refuges.	All.	Per cent.	
							Boys.	Girls.
God,	7827	5067	6927	5935	5704	6633	60.7	39.3
Christ,	6757	4217	5818	5355	5104	5648	61.6	38.4
Bible Stories,	3743	1453	2727	2258	2979	2744	72.	28.
Prayers and Songs,	5400	4647	5078	5613	4850	5041	53.7	46.6
Schneewittchen,	2173	3009	2436	4387	2263	2538	41.9	58.1
Rothkäppchen,	2427	3664	2800	4581	3025	2967	39.8	60.2
Dornröschen,	563	1044	661	1871	808	773	35.	65.
Aschenbrödel,	1784	2897	2182	3871	2032	2270	38.	61.9
Average.								
Religious,	5852	3846	5138	4790	4659	5021	60.3	39.7
Fairy Tales,	1734	2654	2020	3677	2032	2137	39.5	60.5

Thus girls excel in fairy tales and boys in religious concepts. As the opportunities to learn both would not probably differ much, there seems here a difference of disposition. God and Christ were better learned at home and the tales best in the kindergarten. Rothkäppchen was better known than God, and Schneewittchen than Christ. More boys could repeat sentences said to them, or sing musical phrases sung to them, or sing a song, than girls. Kindergarten children came from the richer, refuge children from the poorer class, while parents between these extremes occupy themselves most with their children. The better off the parents the stiller and less imitative the child, is a law suggested by the statistics of abilities. Not only method but choice and arrangement of the material of instruction depend on the knowledge the child has. Further investigations on narrower and more closely related subjects should be chosen. Six to twelve closely related points is suggested as the best method, and every teacher could occasionally complete such inventories in his or her room.

In Germany it is more common than in our country to connect songs, poetry, reading and object lessons, instruction in history, geography, botany, geology and other elementary branches with the immediate locality. A school geography of Leipzic, *e. g.*, begins with the school house and yard, the street, with cross sections of it to show drainage, gas, etc., and then widens out into the world by concentric circles. Stated holiday walks conducted by teachers for educational purposes and for making collections for the school rooms are more common. The psychic peculiarities of different school districts of Berlin seemed to be influenced surprisingly by locality.

In 1879 Dr. K. Lange urged that a six years child has learned already far more than a student learns in his entire university course. "These six years have been full of advancement like the six days of creation." Concrete conceptions have been accumulated in vast numbers and the teacher must not assume that a *tabula rasa* is before him. Both this and the presumption of too much knowledge would be to build upon sand. Children have experienced and learned far more than they can put into words; hence again the need of cross-questioning. Lange's table below was based on 500 children entering the city schools of Plauen, and 300 entering 21 country schools in out-lying districts, and the figures represent the per cents of those having the concept.

	Questions or Concept.	City Children.	Country Children.
1.	Seen the sun rise,	18	42
2.	Seen the sun set,	23	58
3.	Seen the moon and stars,	84	82
4.	Seen and heard lark,	20	70
5.	Fish swimming wild,	72	83
6.	Been to a pond,	51	86
7.	Been to a brook or river,	71	82
8.	Been on high hill or mountain,	48	74
9.	Been in a forest,	63	86
10.	Knows an oak,	18	57
11.	Seen a corn or wheatfield,	64	92
12.	Knows how bread comes from grain,	28	63
13.	Seen a shoemaker at work,	79	80
14.	Seen a carpenter at work,	55	62
15.	Seen a mason at work,	86	92
16.	Been in a church,	50	49
17.	Knows aught of the dear God,	51	66

Only 43 per cent. of the city children had ever been to any other town or village, only 18 per cent. had seen the castle near by, and knowledge of colors was as follows, beginning with those best known and ending with the least known: black, white, red, green, blue, yellow. The ignorance of city children shows the utility of school excursions. Girls had seen, heard and experienced less than boys of all the seventeen subjects of enquiry save the "dear God," of whom they knew more than the boys. Little is told of Lange's methods, or whether or how far they led to a modification of the elementary curriculum.

It was with the advantages of many suggestions and not a few warnings from these attempts that the writer undertook,

---

See Die Vorstellungskreis Unserer Sechsjährigen Kleinen. Allg. Schul-Zeitung. Jena, 1879, p. 327 et seq.

soon after the opening of the Boston schools in September, 1880, to make out a list of questions suitable for obtaining an inventory of the contents of the minds of children of average intelligence on entering the primary schools of that city. This was made possible by the liberality of Mrs. Quincy Shaw, who detailed four excellent teachers from her comprehensive system of kindergartens to act as special questioners under the writer's direction, and by the co-operation of Miss L. B. Pingree, their superintendent. All the local and many other of the German questions were not suitable to children here, and the task of selecting those that should be so, though perhaps not involving quite so many perplexing considerations as choosing an equally long list of "normal words," was by no means easy. They must not be too familiar nor too hard and remote, but must give free and easy play to thought and memory. But especially, to yield most practical results, they should lie within the range of what children are commonly supposed or at least desired or expected, by teachers and by those who write primary text-books and prescribe courses of instruction, to know. Many preliminary half-days of questioning small groups of children and receiving suggestions from many sources, and the use of many primers, object-lesson courses, etc., now in use in this country, were necessary before the first provisional list of one hundred and thirty-four questions was printed. The problem first had in mind was strictly practical; viz., what may Boston children be, by their teachers, assumed to know and have seen when they enter school; although other purposes more psychological shaped other questions used later.

The difficulties and sources of possible error in the use of such questions are many. Not only are children prone to imitate others in their answers without stopping to think and give an independent answer of their own, but they often love to seem wise, and, to make themselves interesting, state what seems to interest us without reference to truth, divining the lines of our interest with a subtlety we do not suspect; if absurdities are doubted by the questioner they are sometimes only the more protested by the children; the faculties of some are benumbed and perhaps their tongues tied by bashfulness, while others are careless, listless, inattentive, and answer at random. Again, many questioners are brusque, lacking in sympathy or tact, or real interest or patience in the work, or perhaps regard it as trivial or fruitless. These and many other difficulties seemed best minimized by the following method, which was finally settled upon and, with the co-operation of Mr. E. P. Seaver, superintendent of the Boston schools, put into operation.

The four trained and experienced kindergarten teachers were employed by the hour to question three children at a time in the dressing-room of the school by themselves alone, so as not to interrupt the school-work. No constraint was used, and, as several hours were necessary to finish each set, changes and rests were often needful, while by frequent correspondence and by meetings with the writer to discuss details and compare results uniformity of method was sought. The most honest and unembarrassed child's first answer to a direct question, *e. g.*, whether it has seen a cow, sheep, etc., must rarely or never be taken without careful cross-questioning, a stated method of which was developed respecting many objects. If the child says it has seen a cow, but when asked its size points to its own finger-nail or hand and says, *so big*, as not unfrequently occurs, the inference is that it has at most only seen a picture of a cow, and thinks its size reproduced therein, and accordingly he is set down as deficient on that question. If, however, he is correct in size, but calls the color blue, does not know it as the source of milk, or that it has horns or hoofs,—several errors of the latter order were generally allowed. A worm may be said to *swim* on the ground, butchers to kill only the bad animals, etc.; but when hams are said to grow on trees or in the ground, or a hill is described as a *lump* of dirt, or wool as growing on hens, as sometimes occurs, deficiency is obvious. Thus many other visual and other notions that seem to adults so simple that they must be present to the mind with some completeness or not at all, are in a process of gradual acquisition, element by element, in the mind of a child, so that there must sometimes be confessedly a certain degree of arbitrariness in saying, as, except in cases of peculiar uncertainty, the questioners attempted to do, that the child has the concept or does not have it. Men's first names seemed to have designated single striking qualities, but once applied, they become general or specific names according to circumstances. Again, very few children knew that a tree had bark, leaves, trunk, and roots; but very few indeed had not noticed a tree enough for our "pass." Without specifying further details, it may suffice here to say that the child was given the benefit of every doubt and credited with knowledge wherever its ignorance was not so radical as to make a chaos of what instruction and most primary text-books are wont to assume. It is important also to add that the questioners were requested to report manifest gaps in the child's knowledge *in its own words*, reproducing its syntax, pronunciation, etc.

About sixty teachers besides the four examiners made returns from three or more children each. Many of their returns, however, are incomplete, careless, or show internal contradictions, and can be used only indirectly to control results from the other sources. From more than twice that number two hundred of the Boston children were selected as the basis of the following table. For certain questions and for many statistical purposes this number is much too small to yield very valuable results, but where, as in the majority of cases, the averages of these children taken by fifties have varied less than ten per cent., it is safe to infer that the figures have considerable representative worth and far more than they could have if the percentages were small. The precautions that were taken to avoid schools where the children come from homes representing extremes of either culture or ignorance, or to balance deviations from a preliminary conjecture averaged in one direction by like deviations in the other, and also to select from each school-room with the teacher's aid only children of average capacity and to dismiss each child found unresponsive or not acquainted with the English language, give to the percentages, it is believed, a worth which without these and other precautions to this end only far larger numbers could yield.

The following table shows the general results for a number of those questions which admit of categorical answers, only negative results being recorded; the italicized questions in the "miscellaneous" class being based on only from forty to seventy-five children, the rest on two hundred, or in a few cases, on two hundred and fifty.

In 1883, shortly after my own tables, as below, were published, Superintendent I. M. Greenwood of Kansas City tested 678 children of the lowest primary class in that city, of whom 47 were colored, with some of my questions. I here print his percentages in the last two columns. In his state children are admitted to school at six, but his tests were made in March, April, May, or after some seven months more of school life, and probably at greater age.

Name of the Object of Conception.	Per Cent. of Children Ignorant of it.		
	In Boston.	In Kansas City.	
		White.	Colored.
Beehive	80.	59.4	66.
Crow	77.	47.3	59.
Bluebird	72.5		
Ant	65.5	21.5	19.1
Squirrel	63.	15.	4.2
Snail	62.		
Robin	60.5	30.6	10.6
Sparrow	57.5		
Sheep	54.	3.5	
Bee	52.	7.27	4.2

Name of the Object of Conception.	Per Cent. of Children Ignorant of it.		
	In Boston.	In Kansas City.	
		White.	Colored.
Frog	50.	2.7	
Pig	47.5	1.7	
Chicken	33.5	.5	
Worm	22.	.5	
Butterfly	20.5	.5	
Hen	19.	.1	
Cow	18.5	5.2	
Growing wheat	92.5	23.4	66.
Elm tree	91.5	52.4	89.8
Poplar tree	89.		
Willow	89.		
Growing oats	87.5		
Oak tree	87.	62.2	58.6
Pine	87.	65.6	87.2
Maple	83.	31.2	80.8
Growing moss	81.5	30.7	42.5
“ strawberries	78.5	26.5	1.1
“ clover	74.		
“ beans	71.5		
“ blueberries	67.5		
“ blackberries	66.		
“ corn	65.5		
Chestnut tree	64.		
Planted a seed	63.		
Peaches on a tree	61.		
Growing potatoes	61.		
“ buttercup	55.5		
“ rose	54.		
“ grapes	53.		
“ dandelion	52.		
“ cherries	46.		
“ pears	32.		
“ apples	21.		
Where are the child's ribs	90.5	13.6	6.4
“ “ “ lungs	81.	26.	44.6
“ “ “ heart	80.	18.5	18.1
“ “ “ wrist	70.5	3.	
“ “ ankles	65.5	14.1	
“ “ waist	52.5	14.	4.2
“ “ hips	45.	14.	4.2
“ “ knuckles	36.	2.9	8.5
“ “ elbows	25.	1.5	
Knows right and left hand	21.5	1.	10.2
“ cheek	18.	.5	
“ forehead	15.	.5	
“ throat	13.5	1.1	
“ knee	7.	1.6	
“ stomach	6.	27.2	45.9
Dew	78.	39.1	70.2
What season it is	75.5	31.8	56.1
Seen hail	73.	13.6	18.1
“ rainbow	65.	10.3	2.1
“ sunrise	56.5	16.6	

Name of the Object of Conception.	Per Cent. of Children Ignorant of It.		
	In Boston.	In Kansas City.	
		White.	Colored.
Seen sunset	53.5	19.5	
“ clouds	35.	7.3	
“ stars	14.	3.	
“ moon	7.	26.	53.
Conception of an island	87.5		
“ “ a beach	55.5		
“ “ woods	53.5		
“ “ river	48.		
“ “ pond	40.		
“ “ hill	28.		
“ “ brook	15.		
“ “ triangle	92.		
“ “ square	56.		
“ “ circle	35.		
The number five	28.5		
“ “ four	17.		
“ “ three	8.		
Seen watchmaker at work	68.	30.1	49.7
“ file	65.	20.8	36.1
“ plough	64.5	13.9	8.5
“ spade	62.	7.3	15.
“ hoe	61.	5.	10.6
“ bricklayer at work	44.5	10.1	2.1
“ shoemaker at work	25.	8.7	
“ axe	12.	18.4	53.
Knows green by name	15.		
“ blue by name	14.		
“ yellow by name	13.5		
“ red by name	9.		
That leathern things come from animals	93.4	50.8	72.3
Maxim or proverb	91.5		
Origin of cotton things	90.	35.7	15.
What flour is made of	89.	34.7	57.4
Ability to knit	88.		
What bricks are made of	81.1	33.1	53.
Shape of the world	70.3	46.	47.
Origin of woolen things	69.	55.	44.
Never attended kindergarten	67.5		
Never been in bathing	64.5	13.4	
Can tell no rudiment of a story	58.	23.6	12.7
Not know wooden things are from trees	55.	19.3	6.4
Origin of butter	50.5	6.7	
Origin of meat (from animals)	48.	8.3	12.7
Cannot sew	47.5	23.4	
Cannot strike a given musical tone	40.		
Cannot beat time regularly	39.		
Have never saved cents at home	36.	8.2	12.7
Never been in the country	35.5	13.1	19.
Can repeat no verse	28.	20.	42.5
Source of milk	20.5	4.	

Name of the Object of Concept.	Per cent. of ignorance in 150 girls.	Per cent. of ignorance in 150 boys.	Per cent. of ignorance in 50 Irish children.	Per cent. of ignorance in 50 American children.	Per cent. of ignorance in 64 kindergarten children.
Beehive,	81	75	86	70	61
Ant,	59	60	74	38	26
Squirrel,	69	50	66	42	43
Snail,	69	73	92	72	62
Robin,	69	44	64	36	29
Sheep,	67	47	62	40	40
Bee,	46	32	52	32	26
Frog,	53	38	54	35	35
Pig,	45	27	38	26	22
Chicken,	35	21	32	16	22
Worm,	21	17	26	16	9
Butterfly,	14	16	26	8	9
Hen,	15	14	18	2	14
Cow,	18	12	20	6	10
Growing clover,	59	68	84	42	29
“ corn,	58	50	60	68	32
“ potatoes,	55	54	62	44	34
“ buttercup,	50	51	66	40	31
“ rose,	48	48	60	42	33
“ dandelion,	44	42	62	34	31
“ apples,	16	16	18	12	5
Ribs,	88	92	98	82	68
Ankles,	58	52	62	40	38
Waist,	53	52	64	32	36
Hips,	50	47	72	31	24
Knuckles,	27	27	34	12	23
Elbow,	19	32	36	16	12
Right from left hand,	20	8	14	20	4
Wrist,	21	34	44	9	19
Cheek,	10	12	14	14	4
Forehead,	10	11	12	10	7
Throat,	10	18	14	16	14
Knee,	4	5	2	10	2
Dew,	64	63	92	52	57
What season it is,	59	50	68	48	41
Hail,	75	61	84	52	53
Rainbow,	59	61	70	38	38
Sunrise,	71	53	70	36	53
Sunset	47	49	52	32	29
Star,	15	10	12	4	7
Island,	74	78	84	64	55
Beach,	82	49	60	34	32
Woods,	46	36	46	32	27
River,	38	44	62	12	13
Pond,	31	34	42	24	28
Hill,	23	22	30	12	19
The number five,	26	16	22	24	12
“ four,	15	10	16	14	7
“ three,	7	6	12	8	0

The first Boston Table is based upon about equal numbers of boys and girls, and children of Irish and American parentage greatly predominate; there are 21 Germans, and 19 are divided between 8 other nationalities. 14 per cent. of all examined did not know their age; 6 per cent. were four, 37 per cent. were five, 25 per cent. were six, 12 per cent. were seven, and 2 per cent were eight years old. The returns were carefully tabulated to determine the influence of age, which seems surprisingly unpronounced, indicating, so far as the small numbers go, a slight value of age *per se* as an index of ripeness for school.

In the second Table which is based on Boston children, only columns 2 and 3 are based upon larger numbers and upon less carefully restricted selections from the aggregate returns. In 34 representative questions out of 49 the boys surpass the girls, as the German boys did in 75 per cent. of the Berlin questions. The girls excel in knowledge of the parts of the body, home and family life, thunder, rainbows, in knowledge of square, circle, and triangle, but not in that of cube, sphere, and pyramid, which is harder and later. Their stories are more imaginative, while their knowledge of things outward and remote, their power to sing and articulate correctly from dictation, their acquaintance with number and animals, is distinctly less than that of the boys. The Berlin report infers that the more common, near, or easy a notion is the more likely are the girls to excel the boys, and *vice versa*. Save possibly in the knowledge of the parts of the body, our returns do not indicate difference between the sexes. Boys do seem, however, more likely than girls to be ignorant of common things right about them; where knowledge is wont to be assumed. Column 5 shows that the Irish children tested were behind others on nearly all topics. The Irish girls decidedly outrank the Irish boys, the advantage to the sex being outweighed by the wider knowledge of the boys of other nationalities. Whether, however, the five and six-year old Irish boys are not after all so constituted as to surpass their precocious American playmates later in school or adult life, as since Sigismund many think "slow" children generally do, is one of the most serious questions for the philosophical educator. Column 6 shows in a striking way the advantage of the kindergarten children, without regard to nationality, over all others. Most of the latter tested were from the charity kindergartens, so that superior intelligence of home surroundings can hardly be assumed. Many of them had attended kindergarten but a short time, and the questions were so ordered that the questioners who had a special interest in the kindergarten should not know till near the end of their tests whether or not they had ever attended it. On the other hand, a somewhat larger proportion of the children from the kindergarten had been in the country. Yet on the whole we seem to have here an illustration of the law that we really see not what is near or impresses the retina, but what the attention is called and held to, and what interests are awakened and words found for. Of nearly thirty primary teachers questioned as to the difference between children from kindergartens and others, four saw no difference, and all the rest thought them better fitted for school-work, instancing superior use of language, skill with the hand and slate, quickness, power of observation, singing, number, love of work, neatness, politeness, freedom from the benumbing school-bashfulness, or power to draw from dictation. Many thought them at first more restless and talkative.

There are many other details and more or less probable inferences, but the above are the chief. The work was laborious, involving about fifty thousand items in all. These results are, it is believed, to be in some degree the first opening of a field which should be specialized, and in which single concept-groups should be subjected to more detailed study with larger numbers of children. One difficulty is to get essential points to test for. If these are not characteristic and typical, all such work is worthless. We believe that not only practical educational conclusions of great scope and importance may be based on or illustrated by such results, but, though many sources of inaccuracy may limit their value, that they are of great importance for anthropology and psychology. It is characteristic of an educated man, says Aristotle in substance, not to require a degree of scientific exactness on any subject greater than that which the subject admits. As scientific methods advance, not only are increasingly complex matters subjected to them, but probabilities (which guide nearly all our acts) more and more remote from mathematical certainty are valued.

Steinthal tells an apposite story of six German gentlemen riding socially in a coupé all day, and as they approached the station where they were to separate, one proposed to tell the vocation of each of the others, who were strangers to him, if they would write without hesitation an answer to the question "What destroys its own offspring?" One wrote, Vital force. "You," said the questioner, "are a biologist." Another wrote, War. "You," he said, "are a soldier." Another wrote, Kronos, and was correctly pronounced a philologist; while the publicist revealed himself by writing, Revolution, and the farmer by writing, She-bear. This fable teaches the law of apperception. As Don Quixote saw an army in a flock of sheep and a giant in a windmill, as some see all things in the light of politics, others in that of religion, education, etc., so the Aryan races apperceived the clouds as cows and the rain as their milk, the sun as a horse, the lightning as an arrow; and so the children apperceive rain as God pouring down water; thunder as barrels, boards falling, or cannon; heaven as a well-appointed nursery, etc. They bring more or less developed apperceiving organs with them into school, each older and more familiar concept gaining more apperceptive power over the newer concepts and percepts by use. The older impressions are on the lurch, as it were, for the new ones, and mental freedom and all-sidedness depend on the number and strength of these appropriating concepts. If there are very few, as with children, teaching is like pouring water from a big tub into a small narrow-necked bottle. A teacher who acts upon the now everywhere-admitted fallacy that knowledge of the subject is all that is needed in teaching children pours at random onto more than into the children, talking to rather than with them, and gauging what he gives rather than what they receive. All now agree that the mind can learn only what is related to other things learned before, and that we must start from the knowledge that the children really have and develop this as germs, otherwise we are showing objects that require close scrutiny only to indirect vision, or talking to the blind about color. Alas for the teacher who does not learn more from his children than he can ever hope to teach them! Just in proportion as teachers do this do they cease to be merely mechanical, and acquire interest, perhaps enthusiasm, and surely an all-compensating sense of growth, in their work and life.

From the above tables it seems not too much also to infer —I. That there is next to nothing of pedagogic value the knowledge of which it is safe to assume at the outset of school-life. Hence the need of objects and the danger of books and word cram. Hence many of the best primary teachers in Germany spend from two to four or even six months in talking of objects and drawing them before any beginning of what we till lately have regarded as primary-school work. II. The best preparation parents can give their children for good school-training is to make them acquainted with natural objects, especially with the sights and sounds of the country, and send to them to good and hygienic, as distinct from the most fashionable, kindergartens. III. Every teacher on starting with a new class or in a new locality, to make sure that his efforts along some lines are not utterly lost, should undertake to explore carefully section by section children's minds with all the tact and and ingenuity he can command and acquire, to determine exactly what is already shown; and every normal-school pupil should undertake work of the same kind as an essential part of his traning. IV. The concepts which are most common in the children of a given locality are the earliest to be acquired, while the rarer ones are later. This order may in teaching generally be assumed as a natural one, e. g. apples first and wheat last (Cf. the first Boston Table above). This order, however, varies very greatly with every change of environment, so that the results of explorations of children's minds in one place cannot be assumed to be valid for those of another save within comparatively few concept-spheres.

The high rate of ignorance indicated in the table may surprise most persons who will be likely to read this report, because the childhood they know will be much above the average of intelligence here sought, and because the few memories of childhood which survive in adult life necessarily bear but slight traces of imperfections and are from many causes illusory. Skeins and spools of thread were said to grow on the sheep's back or on bushes, stockings on trees, butter to come from buttercups, flour to be made of beans, oats togrow on oaks, bread to be swelled yeast, trees to be stuck in the ground by God and to be rootless, meat to be dug from the ground, and potatoes to be picked from the trees. Cheese is squeezed butter, the cow says "bow-wow," the pig purrs or burrows, worms are not distinguished from snakes, moss from the "toad's umbrella," bricks from stones, etc. An oak may be known only as an acorn-tree or a button-tree, a pine only as a needle-tree, a bird's nest only as its bed, etc. So that while no one child has all these misconceptions, none are free from them, and thus the liabilities are great that, in this chaos of half-assimilated impressions, half right, half wrong, some lost link may make utter nonsense or mere verbal cram of the most careful instruction, as in the cases of children referred to above who knew much by rote about a cow, its milk, horns, leather, meat, etc., but yet were sure from the picture-book that it was no bigger than a small mouse.

For 86 per cent. of the above questions the average intelligence of thirty-six country children who were tested ranks higher than that of the city children of the Table, and in many items very greatly. The subject-matter of primers for the latter is in great part still traditionally of country life; hence the danger of unwarranted presupposition is considerable. As our methods of teaching grow natural we realize that city life is unnatural, and that those who grow up without knowing the country are defrauded of that without which childhood can never be complete or normal. On the whole, the material of the city is no doubt inferior in pedagogic value to country experience. A few days in the country at this age has raised the level of many a city child's intelligence more than a term or two of school training could do without it. It is there, too, that the foundations of a love of natural science are best laid. We cannot accept without many careful qualifications the evolutionary dictum that the child's mental development should repeat that of the race. Unlike primitive man, the child has a feeble body and is ever influenced by a higher culture about him. Yet from the primeval intimacy with the qualities and habits of plants, with the instincts of animals—so like those of children—with which hawking and trapping, the riding on instead of some distance behind horses, etc., made men familiar; from primitive industries and tools as first freshly suggested, if we believe Geiger, from the normal activities of the human organism, especially of the tool of tools, the hand; from primitive shelter, cooking and clothing, with which anthropological researches make us familiar, it is certain that not a few educational elements of great value can be selected and systematized for children, an increasing number of them in fact being already in use for juvenile games and recreations and for the vacation pastimes of adults. A country barn, a forest with its gloom and awe, its vague fears and indefinite sounds, is a great school at this age. The making of butter, of which some teachers, after hearing so often that it grew inside eggs or on ice, or was made from buttermilk, think it worth while to make a thimbleful in a toy churn at school as an object-lesson; more acquaintance with birds, which, as having the most perfect senses, most constant motion in several elements, even Leopardi could panegyrize as the only real things of joy in the universe, and which the strange power of flight makes ideal beings with children, and whose nests were sometimes said to *grow* on trees; more knowledge of kitchen-chemistry, of foods, their preparation and origin; wide prospects for the eyes—these elements constitute a more pedagogic industrial training for *young* children, because more free and playlike, than sewing, or cooking, or whittling, or special trade-schools can, and are besides more hygienic. Many children locate all that is good and imperfectly known in the country, and nearly a dozen volunteered the statement that good people when they die go to the country—even from Boston. It is things that live and, as it were, detach themselves from their background by moving that catch the eye and with it the attention, and the subjects which occupy and interest the city child are mainly in motion and therefore transient, while the country child comes to know objects at rest better. The country child has more solitude, is likely to develop more independence and is less likely to be prematurely caught up into the absorbing activities and throbbing passions of manhood, and becomes more familiar with the experiences of primitive man. The city child knows a little of many more things and so is more liable to superficiality and has a wider field of error. At the same time it has two great advantages over the country child, in knowing more of human nature and in entering school with a much better developed sense of rhythm and all its important implications. On the whole, however, additional force seems thus given to the argument for excursions, by rail or otherwise, regularly provided for the poorer children who are causing the race to degenerate in the great centres of population, unfavorable enough for those with good homes or even for adults.

Words, in connection with rhyme, rhythm, alliteration, cadence, etc., or even without these, simply as sound-pictures, often absorb the attention of children and yield them a really æsthetic pleasure either quite independently of their meaning or to the utter bewilderment of it. They hear fancied words in noises and sounds of nature and animals, and are persistent punners. As butterflies make butter or eat it or give it by squeezing, so grasshoppers give grass, bees give beads and beans, kittens grow on the pussy-willow, and all honey is from honeysuckles, and even a poplin dress is made of poplar-trees. When the cow lows it somehow blows its own horn; crows and scarecrows are confounded; ant has some subtle relationship to aunt; angle worm suggests angle or triangle or ankle; Martie eats "tomarties;" a holiday is a day to "holler" on; Harry O'Neil is nicknamed Harry Oatmeal; isosceles is somehow related to sausages; October suggests knocked over; "I never saw a hawk, but I can hawk and spit too;" "I will not sing do re mi, but do re *you;*" "Miss Eaton will eat us"—these and many more from the questioners' notes; the story of the child who, puzpuzzled by the unfamiliar reflexive use of the verb, came to associate "now I lay me," etc., with a *lama*; of the child who wondered what kind of a bear was the consecrated cross-eyed-bear as he understood the hymn "The consecrated cross I'd bear;" or of another who was for years stultified as against a dead blank wall whenever the phrase "answer sought" occurred, suggest to us how, more or less consciously and more or less seriously, a child may be led, in the absence of corrective experience, to the most fantastic and otherwise unaccountable distortions of facts by shadowy word-spectres or husks.

In many of the expressions quoted the child seems playing with relations once seriously held, and its "fun" to be joy over but lately broken mental fetters. Some at least of the not infrequently quite unintelligible statements or answers may perhaps be thus accounted for. Again, the child more than the adult thinks in pictures, gestures and inarticulate sounds. The distinction between real and verbal knowledge has been carefully and constantly kept in mind by the questioners. Yet of the objects in the above table, except a very few, like triangle and sparrow, a child may be said to know almost nothing, at least for school purposes, if he has no generally recognized name for them. The far greater danger is the converse, that only the name and not the thing itself will be known. To test for this danger was, with the exceptions presently to be noted, our constant aim, as it is that of true education to obviate it. The danger, however, is after all quite limited here, for the linguistic imperfections of children are far more often shown in combining words than in naming the concrete things they know or do not know. To name an object is a passion with them, for it is to put their own mark upon it, to appropriate it, From the talk which most children hear and use to book language is again an immense step. Words *live* only in the ear and mouth, and are pale and corpse-like when addressed to the eye. What we want, and indeed are likely soon to have, are carefully arranged child vocabularies and dictionaries of both verbal forms and meanings, to show teachers just the phonic elements and vocal combinations children have most trouble with, the words they most readily and surely acquire, their number and order in each thought-sphere—and the attributes and connotations most liable to confuse them. To that work it is believed the method here employed has already furnished valuable material in protocol soon to be augmented and digested.

To specify a few items more fully, the four color-questions were designed to test, not color-blindness, but the power to use color-names. The Holmgren worsteds were used, from which the child was asked to pick out, not colors like others to which its attention is directed without naming them, but the color named, to which he has no clue but the name. It did not seem safe to complicate the objects of the latter educational test with the former, so that some of those marked defective in the table may or may not have been color-blind. Excluding colored and Jewish children, both of whom seem to show exceptional percentages, and averaging the sexes, both Magnus and Jeffries found a little over two per cent. of many thousand children color-blind. The children they tested, however, were much older than these, and two or three hundred is far too small a number to warrant us, were it otherwise allowable, in simply subtracting two per cent. and inferring that the remainder were deficient only in knowledge of the color-word. Our figures, then, do not bear upon the question whether the color-sense itself is fully developed before the age of five or six or not. Again, number cannot be developed to any practical extent without knowledge of the number-name. Moroever, as Wundt's careful experiments show, the eye can apprehend but three of the smallest and simplest objects, unless they are arranged in some geometrical order, without taking additional time to count. As the chromatic scale grades musical intervals, or the names we count by graduate the vague sense of more or less, and, later, as visible notes change all musical ideas and possibilities, so figures or number-signs almost create arithmetic. A child who seriously says a cat has three or five legs will pick out its own, *e. g.* the fourth seat in the fifth row in an empty school-room almost every time by happy guessing, and hold up "so many" fingers or blocks, when, if the number-name five or six were called for and nothing shown, it would be quite confused. In our tests the number-name was sought because it is that which is mainly serviceable for educational purposes. As to the physiological and geographical questions little need be said. Joint, flesh, and vein are often unknown terms, or joint is where the bone is broken, and there are stones in the knees. Within the skin is blood and something hard, perhaps wood. Physical self-consciousness, which is in little danger of becoming morbid at this age, begins with recognition of the hand, then of the foot, because these are the most mobile parts, but has not often reached the face at this age, and blushing is rare; while psychic self-consciousness is commonly only of pain, either internal, as of stomach-ache, or peripheral, of cuts, bruises, etc. The world is square, straight, or flat, and if the other side has been thought of it is all woods or water or ice, or where saved people or Protestants, or anything much heard of but little seen, are; if we go to the edge of the world we come to water or may fall off, or it may be like a house and we live on top. The first notion of a hill may be of some particular pile of sand, perhaps on the moulding-board, three inches high, or a rubbish-heap in the back yard, or a slant where a sled will run alone; but a comprehensive idea of hill with opposite sides, though simpler and easier than most geographical categories, is by no means to be assumed.

If children are pressed to answer questions somewhat beyond their ken they often reply confusedly and at random, while if others beside them are questioned they can answer well; some are bolder and invent things on the spot if they seem to interest the questioner, while others catch quick subtle suggestions from the form of the question, accent, gesture, feature, etc., so that what seems originality is really mind-reading, giving back our very thought, and is sometimes only a direct reproduction, with but little distortion because little apprehension, of what parents or teachers have lately told them. But there are certain elements which every tactful and experienced friend of children learns to distinguish from each of these with considerable accuracy — elements which, from whatever source, spring from deep roots in the childish heart, as distinct from all these as are Grimm's tales from those of some of our weakly juvenile weeklies. These are generally not easily accessible. I could not persuade an old nurse to repeat to me a nonsensical song I half overheard that delighted a two-year-old child, and the brothers Grimm experienced a similar difficulty in making their collections. As many workingmen nail a horseshoe over their door for luck and many people really prefer to begin nothing important on Friday who will not confess to a trace of superstition in either case, so children cling to their "old credulities to nature dear," refusing every attempt to gain their full confidence or explore secret tracts in their minds, as a well developed system of insane illusions may escape the scrutiny of the most skilful alienist. As a reasoning electric light might honestly doubt the existence of such things as shadows because, however near or numerous, they are always hidden from it, so the most intelligent adults quite commonly fail to recognize sides of their own children's souls which can be seen only by strategy. A boy and girl often play under my window as I write, and when either is quite alone unconscious words often reveal what is passing in their own minds, and it is often very absurd or else meaningless, but they run away with shame and even blushes if they chance to look up suddenly and catch me listening. Yet who of us has not secret regions of soul to which no friend is ever admitted, and which we ourselves shrink from full consciousness of? Many children half believe the doll feels cold or blows, that it pains flowers to tear or burn them, or that in summer when the tree is alive it makes it ache to pound or chop it. Of 48 children questioned 20 believed sun, moon, or stars to live, 15 thought a doll, and 16 thought flowers would suffer pain if burned. Children who are accounted dull in school-work are more apt to be imaginative and animistic.

The chief field for such fond and often secret childish fancies is the sky. About three fourths of all questioned thought the world a plain, and many described it as round like a dollar, while the sky is like a flattened bowl turned over it. The sky is often *thin*, one might *easily break through;* half the moon may be seen through it, while the other half is this side; it may be *made of snow*, but is so large that there is *much floor-sweeping* to be done in heaven. Some thought *the sun went down at night into the ground* or just behind certain houses, and went across, on, or under the ground to *go up*, *out of*, or *off the water* in the morning, but 48 per cent. of all thought that at night it *goes* or *rolls* or *flies*, is *blown* or *walks*, or *God pulls it up* higher out of sight. He *takes it into heaven*, and perhaps *puts it to bed*, and even *takes off its clothes* and puts them on in the morning, or again it *lies under the trees* where the angels *mind it*, or goes through and *shines on the upper side of the sky*, or goes *into* or *behind the moon*, as the moon is behind it in the day. It may *stay where it is*, only we *cannot see it*, *for it is dark*, or the *dark rains down so*, and it *comes out when it gets light so it can see.* More than half the children questioned conceived the sun as never more than 40 degrees from the zenith, and, naturally enough, city children knew little of the horizon. So the moon (still italicizing where the exact words of the children are given) *comes around when it is a bright night* and people *want to walk*, or *forget to light some lamps;* it *follows us about* and has nose and eyes, while it *calls the stars into*, *under*, or *behind* it at night, and they may be *made of bits of it.* Sometimes the moon is *round a month or two*, then it is a *rim*, or a *piece is cut off*, or it is *half stuck* or *half buttoned into* the sky. The stars may be *sparks from fire-engines* or houses, or with higher intelligence, they are silver, or *God lights them with matches* and *blows them out* or *opens the door* and calls them in in the morning. Only in a single case were any of the heavenly bodies conceived as openings in the sky to let light or glory through, or as eyes of supernatural beings — a fancy so often ascribed to children and so often found in juvenile literature. Thunder, which, anthropologists tell us, is or represents the highest God to most savage races, was apperceived as God *groaning* or *kicking*, or *rolling barrels about*, or *turning a big handle*, or *grinding snow*, *walking loud*, *breaking something*, *throwing logs*, *having coal run in*, *pounding about* with a *big hammer*, *rattling houses*, *hitting the clouds*, or clouds *bumping* or *clapping* together or *bursting*, or else it was merely *ice sliding off lots of houses*, or *cannon in the city* or sky, hard *rain down the chimney*, or *big rocks pounding*, or *piles of boards falling down*, or very hard rain, hail or wind. Lightning is God *putting out His finger* or *opening a door*, or *turning a gas quick*, or (very common) *striking many matches at once*, throwing *stones and iron for sparks*, *setting paper afire*, or it is light going outside and inside the sky, or stars falling. God keeps rain in heaven in a *big sink*, *rows of buckets*, a *big tub* or *barrels*, and they *run over* or he *lets it down* with a *water-hose*, through a *sieve*, a *dipper with holes*, or *sprinkles* or *tips* it down or *turns a faucet*. God makes it in heaven out of nothing or out of water, or it gets up by *splashing up*, or he *dips it up off the roof*, or it *rains up off the ground when we don't see it*. The clouds are *close to the sky;* they move because the *earth moves and makes them*. They are *dirty, muddy things*, or *blankets*, or *doors of heaven*, and are made of fog, of *steam that makes the sun go*, of smoke, of *white wool* or *feathers and birds*, or *lace* or *cloth*. In their changing forms very many children, whose very life is fancy, think they see veritable men, or more commonly, because they have so many more forms, animals' faces, and very often God, Santa Claus, angels, etc., are also seen. Closely connected with the above are the religious concepts so common with children. God is a *big*, perhaps *blue man*, very often seen in the sky on or in the clouds, in the church, or even street. He *came in our gate*, *comes to see us sometimes*. He lives in a *big palace* or a big *brick* or *stone house on the sky*. He makes lamps, babies, dogs, trees, money, etc., and the angels *work for him*. He looks like the priest, Fröbel, papa, etc., and they like to look at him, and a few would like to be God. He *lights the stars so he can see to go on the sidewalk* or *into the church*. Birds, children, Santa Claus, live with him, and most but not all like him better than they do the latter. When people die they just *go*, or are *put in a hole*, or a box or a *black wagon that goes to heaven*, or they *fly up* or are *drawn* or *slung* up into the sky where God *catches* them. They *never can get out of the hole*, and yet all good people somehow get where God is. He *lifts* them up, they *go up on a ladder or rope*, or they carry them up, but *keep their eyes shut so they do not know the way*, or they are *shoved up through a hole*. When children get there they have candy, rocking-horses, guns, and everything in the toy-shop or picture-book, play marbles, top, ball, cards, hookey, hear brass bands, have nice clothes, gold watches, and pets, ice-cream and soda-water, and no school. There are men who died in the war made into angels, and dolls with broken heads go there. Some think they must go through the church to get there, a few thought the horse-cars run there, and one said that the *birds that grow on apple-trees are drawn up there by the moon*. The bad place is like an *oven* or a *police-sta* *tion*, where it burns, yet is all dark, and folks want to get back, and God *kills* people or *beats them with a cane*. God makes babies in heaven, though the holy mother and even Santa Claus make some. He *lets them down or drops them*, and the women or doctors *catch* them, or he leaves them on the sidewalk, or *brings them down a wooden ladder backwards and pulls it up again*, or mamma or the doctor or the nurse *go up and fetch them* sometimes *in a balloon*, or they *fly down and lose off their wings in some place or other and forget it*, or *jump down to Jesus*, who *gives them around*. They were also often said to be found in flour-barrels, and the *flour sticks ever so long you know*, or they *grow in cabbages*, or God *puts them in water*, perhaps *in the sewer*, and the doctor gets them out and *takes them to sick folks that want them*, or the milkman brings them early in the morning, they are dug out of the ground, or bought at the baby-store. Sometimes God *puts on a few things* or else *sends them along if he don't forget it;* this shows that no one since Basedow believes in telling children the truth in all things.

Not many children have or can be made to disclose many such ideas as the above, and indeed they seem to be generally already on the ebb at this age, and are sometimes timidly introduced by, *as if*, *some say*, it is *like*, or *I used to think*. Clear and confident notions on the above topics are the exception and not the rule, yet most have some of them, while some are common to many, indeed to most, children. They represent a drift of consentient infantile philosophy about the universe not without systematic coherence, although intimidated and broken through at every point by fragmentary truths, often only verbal indeed, without insight or realization of a higher order, so that the most diametrical contradictions often subsist peacefully side by side, and yet they are ever forming again at lower levels of age and intelligence. In all that is remote the real and ideal fade into each other like clouds and mountains in the horizon, or as poetry, which keeps alive the standpoints of an earlier culture, coexists with science. Children are often hardly conscious of them at all, and the very questions that bring them to mind and invite them to words at the same time often abash the child to the first disquieting self-consciousness of the absurdity of his fond fancies that have felt not only life but character in natural objects. Between the products of childish spontaneity, where the unmistakable child's mark is seen, and those of really *happy* suggestion by parents, etc., the distinction is as hard as anywhere along the line between heredity and tradition. It is enough that these fancies are like Galton's composite portraits, resultants in form and shading of the manifold deepest impressions which what is within and what is without have together made upon the child's soul in these spheres of ideas. Those indicated above represent many strata of intelligence up through which the mind is passing very rapidly and with quite radical transformations. Each stratum was once, with but a little elaboration, or is now somewhere, the highest culture, relegated to and arrested in an earlier stage as civilization and educational methods advance. Belief in the false is as necessary as it is inevitable, in children for the proper balance of head and heart, and happy the child who has believed or loved only healthy, unaffected, platonic lies like the above, which will be shed with its milk-teeth when more solid mental pabulum can be digested. It is possible that the present shall be so attractive and preoccupying that the child never once sends his thoughts to the remote in time and place, and these baby-fancies — ever ready to form at a touch, which make the impartation of truth, however carefully put, on these themes impossible before its time; which, when long forgotten, yet often reverberate, if their old chords be struck in adults to the intensity of fanaticism or even delusion — shall be quite repressed. If so, one of the best elements of education which comes from long experience in laying aside a lower for a higher phase of culture by doubting opportunely, judiciously, and temperately, is lost.

De Quincey's pseudopia is thought by Dr. E. H. Clarke (Visions, p. 212) to be common with children; but although about 40 were asked to describe what they saw with their eyes shut, it is impossible to judge whether they visualize in any such distinctive sense as Mr. Galton has described, or only imagine and remember, often with Homeric circumstance, but with less picturesque vividness. Childish thought is very largely in visual terms; hence the need of object (Anschauungs) lessons, and hence, too, it comes that most of the above questions address the eye without any such intent. If phonic symbols could be made pictorial, as they were originally, and as illustrated primers made them in a third and still remoter sense, the irrational elements in learning to read would be largely obviated. Again, out of 53 children 21 described the tones of certain instruments as colored.[1] The colors, or "photisms," thus suggested, though so far as tested constant from week to week in the same child, had no agreement for different instruments, a drum, *e. g.*, suggesting yellow (the favorite color of children) to one child and black or red to another, and the tone of a fife being described as pale or bright, light or dark colored, intensity and saturation varying greatly with different children. For this and other forms of association or analogies of sensations of a large and not yet explored class so common in children, many data for future study were gathered. This was also the case with their powers of time and tone reproduction, and their common errors in articulation, which have suggested other and more detailed researches, some of which are already in progress.

---

[1] In the sense of Bleuler and Lehmann. See their treatise "Zwangmässige Lichtempfindung durch Schall." Leipzic, 1881. Also, Lazarus' "Leben der Seele," II, p. 131.

Each child was asked to name three things right and three things wrong to do, and nearly half could do so. In no case were the two confused, indicating not necessarily intuitive perception, but a general consensus in what is allowed and forbidden children at home, and how much better and more surely they learn to do than to know. Wrong things were specified much more readily and by more children than right things, and also in much greater variety. In about 450 answers 53 wrongs act are specified, while in over 350 answers only 34 different good acts are named. The more frequent answers are to mind and be good, or to disobey, be naughty, lie, and say bad words; but the answers of the girls differ from the boys in two marked ways; they more often name specific acts and nearly twice as often conventional ones, the former difference being most common in naming right, the latter in naming wrong things. Boys say it is wrong to steal, fight, kick, break windows, get drunk, stick pins into others, or to "sass," "cuss," shoot them, while girls are more apt to say it is wrong not to comb the hair, to get butter on the dress, climb trees, unfold the hands, cry, catch flies, etc. The right things seem, it must be confessed, comparatively very tame and unattractive, and while the genius of an Aristotle could hardly extract categories or infer intuitions by classification from either list, it is very manifest that the lower strata of conscience are dislike of dirt and fear. Pure intuitionalists may like to know that over a dozen children were found who convinced their questioners that they thought they ought not to say bad words if no one heard them, or lie if not found out, etc., or who felt sick at the stomach when they had been bad, but the soap and water or sand with which their mouths are sometimes washed after bad words in kindergartens, or the red pepper administered at home after lies, may possibly have something to do with the latter phenomenon.

From several hundred drawings, with the name given them by the child written by the teacher, the chief difference inferred is in concentration. Some make faint, hasty lines representing all the furniture of a room, or sky and stars, or all the objects they can think of, while others concentrate upon a single object. It is a girl *with buttons* a house *with* a *key-hole* or steps, a man *with a pipe* or heels or ring grotesquely prominent. The development of observation and sense of form is best seen in the pictures of men. The earliest and simplest representation is a round head, two eyes and legs. Later comes mouth, then nose, then hair, then ears. Arms like legs at first grow directly from the head, rarely from the legs, and are seldom fingerless, though sometimes it is doubtful whether several arms or fingers from head and legs without arms are meant. Of 44 human heads only 9 are in profile. This is one of the many analogies with the rock and cave drawings of primitive man, and suggests how Catlin came to nearly lose his life by "leaving out the other half" in drawing a profile portrait of an Indian chief. Last, as least mobile and thus attracting least attention, comes the body; first round like the head, then elongated, sometimes prodigiously, and sometimes articulated into several compartments, and in three cases divided, the upper part of the figure being in one place and the lower in another. The mind, and not the eye alone, is addressed, for the body is drawn and then the clothes are drawn on it (as the child dresses), diaphanous and only in outline. Most draw living objects except the kindergarten children, who draw their patterns. More than two thirds of all objects are decidedly in action, and under 18 per cent. are added word-pictures or scribbles called the *name* of the objects and made to imitate writing or letters, as children who cannot talk often make gibbering, sputtering sounds to imitate talking. The very earliest pencillings, commonly of three-year-old children, are mere marks to and fro, often nearly in the same line. Of 13 of these most were *nearly* in the angle described by Javal as corresponding to the earliest combination of finger and fore-arm movements and not far from the regulation slant of 52° taught in school penmanship.

Each child was asked to tell a verse or story to be recorded verbatim, and nearly half could do so. Children of this age are no longer interested in mere animal noises or rhymes or nonsense-words of the "Mother Goose" order, but everything to interest them deeply must have a cat, dog, bird, baby, another child, or possibly parent or teacher in it, must be dramatic and full of action, appeal to the eye as a "chalk-talk" or an object-lesson, and be copious of details, which need be varied but slightly to make the story as good as new for the twentieth time. A long gradation of abstractions culminates here. First, it is a great lesson for the child to eliminate touch and recognize objects by the eye alone. The first good pictures mentally seen are felt of, turned over with much confusion to find the surface smooth. To abstract from visual terms to words is still harder. Eyes and tongue must work together a long time before the former can be eliminated and stories told of objects first absent, then remote, then before unknown. Children must be far beyond this before they can be interested *e. g.*, in fairy tales, and stories told interest them far more than if read to them, no matter how apt the language. They are reproduced about as imperfectly as objects are drawn, only a few salient and disconnected points being seized at first, and sentence and sequence coming very slowly after many repetitions. Their own little faults may be woven in or ascribed to animals or even plants in a remote way which they themselves will feel at each stage, and the selfish birdie or the runaway squirrel or flowers as kind words may be referred to in case of need as a reserve moral capital. Why do we never teach maxims and proverbs which, when carefully selected, are found so effective at this age and teach the best morality embodied in the briefest and most impressive way?

Of the 36 per cent. or 72 children of the table who never saved their pennies, 52 spend them for candy, which growing children need, but the adulterations of which are often noxious. Of toys, big things please them best. A recent writer in Austria fears that school savings-banks tend to call attention too early to money matters, and to cause its value to be dangerously overrated; but to pass the candy by and drop the cents where they are beyond their control for years is much less pedagogic than to save them till a larger and more costly toy can be bought.

The next experimental inquiry[1] in the field was also made in quest of a natural basis of the first school instruction. If we look at the developing effect upon the person of the pupil, progress in the upper gymnasial classes is perhaps less than in the first year of school, although, if we regard the quantity of acquisition or its importance, it is much greater. That the matter of instruction is preferred to the development of the person of the pupil is the cause of the memory cram and neglect of pedagogy, which often makes school-keeping, as Grimm called it, lower than the work of the day laborer. Herbart, Ziller, and Stoy, however, plead for "educating instruction," and showed will to be rooted in the sphere of thought, which should first be moral and religious. Many-sided interest is the root and key of all. Interest may be of knowledge or of perception, and statistical inquiry might seek to determine which class of interests predominate, and whether reproduction was slow, confused, partial or the reverse. The Berlin tables showed what ideas were lacking, but Lange sought the ideas that were not lacking, as a basis of school knowledge. The child's soul is no *tabula rasa*, and very suggestive are papers on the best methods of excursions for city schools, on the educational value and use of home and its environment and apperception.

---

[1] Die Analyse des Kindlichen Gedankenkreises, Dr. B. Hartmann. Annaberg, 1890, p. 116.

Hartmann's tests were made solely, he says, in the interests of the Annaberg schools, to determine the natural basis of the course of study there for the first year or two of school. The 14 plainer questions were not enough, and he had not heard of the Boston tests, and so those of Berlin were largely his model. His tests were better than all others in one respect, viz: they were repeated five years, 1880–84, on as many groups of children entering school, and they have given rise to analagous tests in other cities, best perhaps in Döbeln. For Hartmann's purpose a large number of questions were needed, and interests of knowledge must be regarded more than those of sympathy or participation. To an Herbartian the former seems earlier and richer, but the ideal of normalizing a sphere of thought is evident. Concepts likely to be wanting in children of that town were excluded in favor of those easily accessible to every child, yet those chosen were not model or normal in the sense that often others as good might not have been chosen. The flying, singing lark may be seen every day in spring at Annaberg, and if it has not been noticed, the child may be inert and indifferent, or its senses dull or defective, and this would also be the inference had the swallow been chosen. By this method each locality will find objects especially prominent and peculiar to it. A book by E. Piltz, entitled "Schoolchildren's Observation of Nature," and Sigismund's "The Family as a School of Nature," contains good lists of topics (the former 700 of them) and reports from similar tests. As a manufacturing centre of passementerie, and a shire town and retail centre, Annaberg has rich and poor, and its prosperity depends on changes in fashions, so that the 265 children entering its schools yearly differ greatly. Some children were very bashful on first entering school, used to only the local dialect which most teachers did not speak, but by beginning with the easiest questions and talking of parents and toys, these difficulties were minimized. Thus answers were often enigmatical and much cross and indirect questioning was required before the dash which signified knowledge on the point, or the plus sign which signified its absence, could be made. In all 1312 children, 660 boys and 652 girls, were tested, all between 6¾ and 5¾ years old, the tests being made before and after regular school hours, by the teacher, who worked with small groups and made them answer individually when possible.

The table below reads as follows: out of 660 boys entering schools in Annaberg, 1881–4, 126, or 19 per cent., had seen a wild hare, etc.

No.	Object.	660 Boys.	652 Girls.	1312 in all.	Percentages.		
					Boys.	Girls.	Sum.
1.	Hare,	126	81	207	19	12	16
2.	Squirrel,	99	69	168	15	10	13
3.	Flock of sheep,	235	198	433	36	30	33
4.	Starling,	85	68	153	13	10	12
5.	Goose,	272	250	522	41	38	40
6.	Hen,	195	178	373	30	27	28
7.	Cuckoo,	69	88	157	10	13	12
8.	Lark,	76	83	159	12	13	12
9.	Frog,	188	126	314	29	19	24
10.	Fish,	141	122	263	21	19	20
11.	Bee,	75	46	121	11	7	9
12.	Butterfly,	287	362	649	44	55	49
13.	Snail,	210	201	411	32	31	31
14.	Birch,	33	10	43	5	2	3
15.	Pine,	145	148	293	22	23	22
16.	Acorn,	17	11	28	3	2	2
17.	Cherry tree,	83	138	221	13	21	17
18.	Apple tree,	208	219	427	31	34	33
19.	Hazel nut	78	42	120	12	6	9
20.	Flowers,	322	317	639	49	49	49
21.	Whortle berry,	158	193	351	24	29	27
22.	Moss,	130	107	237	20	16	18
23.	Mushroom,	113	165	278	17	25	21
24.	Sandpit,	58	37	95	9	6	7
25.	Quarry,	121	105	226	18	16	17
26.	Mine,	41	33	74	6	5	6
27.	Tempest,	363	424	787	55	65	59
28.	Fog,	186	246	432	28	38	33
29.	Clouds,	266	293	559	40	45	42
30.	Hailstones,	307	315	622	46	48	47
31.	Rainbow,	226	264	490	34	40	37
32.	Evening sky,	119	166	285	18	25	22
33.	Sunset,	82	77	159	12	12	12
34.	Phases of moon,	148	223	371	22	34	28
35.	Starry sky	349	466	815	53	71	62
36.	Clock (time),	27	18	45	4	3	3
37.	Days of week,	54	92	146	8	14	11
38.	Seasons,	37	64	101	6	10	8
39.	Constellations,	4	1	5	1	0	1
40.	Dwelling,	543	503	1046	82	77	80
41.	Zürcher Sq.,	346	328	674	52	50	51
42.	Chief market,	471	452	923	71	69	70
43.	Buchholzer St.,	278	281	559	42	43	43
44.	Real Gymnasium,	133	164	297	20	25	23
45.	Berg church,	210	220	430	32	34	33
46.	Catholic "	231	237	468	35	36	36
47.	Town hall,	430	403	833	65	62	63

No.	Object.	660 Boys.	652 Girls.	1312 in all.	Percentages. Boys.	Girls.	Sum.
48.	Post office,	297	344	641	45	53	49
49.	R. R. Station,	418	433	851	63	66	65
50.	Bahls Restaurant,	167	189	356	25	29	27
51.	Nursery tree,	163	180	343	25	27	26
52.	Markus-Röhling (an old mine),	193	267	460	29	41	35
53.	Promenade,	228	292	520	35	45	40
54.	Grove,	172	253	425	26	39	32
55.	Church-yard,	394	469	863	60	72	66
56.	Pöhlberg,	217	244	461	33	37	35
57.	Galgenberg,	89	89	178	13	13	13
58.	Schreckenberg,	117	112	229	18	17	17
59.	Buchheltz,	282	329	611	43	50	47
60.	Frohnau,	164	226	390	25	35	30
61.	Wiesenbad	121	159	280	18	24	21
62.	Geyersdorf,	139	200	339	21	31	26
63.	Valley,	51	59	110	8	9	8
64.	River,	150	157	307	23	24	23
65.	Bridge,	282	258	540	43	39	41
66.	Water-mills,	152	151	303	23	23	23
67.	Pond,	434	490	924	66	75	70
68.	Meadow,	250	218	468	38	33	36
69.	Corn field,	183	111	294	28	17	22
70.	Potato field,	345	358	703	52	55	54
71.	Snow landscape,	289	262	551	44	40	42
72.	Village,	158	175	333	24	27	25
73.	Soldiers' monument,	180	136	316	27	21	24
74.	Fountain,	397	394	791	60	60	60
75.	Carriage driving,	332	362	694	50	55	53
76.	Road,	300	346	646	45	53	49
77.	Field works,	250	181	431	38	28	33
78.	Garden works,	213	211	424	32	32	32
79.	Acute angled triangle,	62	66	128	9	10	10
80.	Square,	101	90	191	15	14	15
81.	Cube,	214	293	507	32	45	39
82.	Circle,	280	284	564	42	43	43
83.	Sphere or globe,	546	510	1056	83	78	80
84.	Counting from 1 to 10,	456	405	861	69	62	66
85.	God,	370	401	771	56	61	59
86.	Jesus,	68	142	210	10	22	16
87.	Bible History,	7	14	21	1	2	2
88.	Prayers and Songs,	122	184	306	18	28	23
89.	Divine service,	192	223	415	29	34	32
90.	Baptism,	118	228	346	18	35	26
91.	Wedding	70	227	297	11	35	23
92.	Father's name and station,	425	370	795	64	57	61
93.	King,	52	42	94	8	6	7
94.	Coins,	450	398	848	68	61	65
95.	Sickness,	356	406	762	54	62	58
96.	Fairy-tale,	32	39	71	5	6	5

No. Object.	660 Boys.	652 Girls.	1312 in all.	Percentages. Boys.	Girls.	Sum.
97. Repetition in speaking,	480	426	906	73	65	69
98. Recitation,	68	62	130	10	9	10
99. Repetition in singing,	226	243	469	34	37	36
100. To sing songs,	102	161	263	15	25	20

The objects it will be observed are here arranged in groups as follows: animals 1–13, plants 14–23, mineral 24–26, events in nature 27–35, time 36–39, localities 40–51, the home landscape 52–78, mathematical 79–84, religious 85–91, social 94–94, miscellaneous 95–100. Of the children tested the first year the individual record of a few was followed and given with detail. A boy who passed on 75 out of the 100 showed an excellent record each year. He had a large vocabulary, yet would repeat a story with a fidelity to the words it was told in that was almost servile. He was better in sharp thought than in phantasy. A girl was deficient in all groups and almost zero in some, having only 41 per cent. of the questions, and a boy had but 12 of the 100 usable concepts. The school marks and the carefully kept individuality-books in these and other cases corresponded very nearly to the efficiency shown in the preliminary tests. Not only do the latter harmonize with following school years, but Hartmann thinks that from a careful inspection of the results of each group into which the 100 questions fall the mental ability if not the future career of the child can be predicted. What shall be said, he adds, of the waste of the general public school in which all three of these children are taught side by side in the same class?

In this inventory great stress was laid upon the natural setting of each object. The questioners were told that it was not sufficient to have seen, but they must have ridden on the cars, the apple tree must have had apples on it, the butterfly must have been on the flower, the sheep grazing, the frog springing, etc. One of these concepts was known to but five, and one to 1056 of the 1312 children, and the others were between these extremes. In animals, minerals and the social group only did boys excel. Girls excelled in 56 and boys in 38 objects. Girls excelled the boys in their marks also in the first, second and third school year, but less and less, till in the sixth year the boys were distinctly ahead. Again, on entering the usual elementary school, each boy had on the average 30.7 of the 100 concepts, and each girl 36.7. At the end of the first school year the boys had an average mark of progress of 3.03, and each girl 2.53. Thus we can form the proportion, $36.7:30.7 = 3.03:x$, which gives, as the value of its fourth term, 2.535, which varies only 0.005 from the actual mark of the girls. For each of the next three years the deviation is hardly greater. The product of the number of concepts multiplied by the chief school mark in Germany which designates progress comes out about the same in girls' as in boys' classes. Out of the 100 usable concepts the average girl had 32.9, the average boy 30.8. The average Annaberg number, 31.9, is thus small. So valuable were these tests for determining the individuality of the child, for the program and for the teachers that at Easter either the entire hundred, or at least the best 30 questions, are tested each year. These are the following: hare, hen, frog, butterfly, fir tree, flower, thunderstorm, rainbow, moon-phases, days of the week, child's home, city hall, railway station, potato field, snow landscape, cube, numbers, work in the field, baptism, coins, sickness, God, Jesus, and localities. In the practice school of the Pedagogical Seminary at Jena, each school year begins with this analysis of the children's sphere of thought.

The complete course of study for the first and second school year based upon his inquest the author reserves for a later pamphlet, and gives here only an outline of his ideas. Nothing fulfils all the conditions of Herbartian interest at first better than Bible stories; but only 25 per cent. of the children have usable Bible concepts, and their apperceptive organs are hardly developed enough to make this fruitful. *Genuine* child stories according to Willmann must have five marks, viz: they must be really child-like or simple and full of fancy, they must excite and educate the mental judgment, must be instructive and of permanent worth, they must make a deep unitary impression which shall be a centre of future interest. It must thus be popular and classical. Hartmann thanks God that this demand can be met by the Grimm *Märchen*. Since Ziller's first plea for Märchen in school nearly a quarter of a century ago the battle about them has raged. Hartmann disagrees with Ziller and Rein in thinking that four of these are enough for the first school year and feed all the Herbartian interests. The *Star Dollars*, which teaches that although all desert the child there is *One* that does not, comes last. Rein is charged with selecting his twelve tales arbitrarily, without the justification which only such a preliminary inquest can give, or else for external reasons, as basis for instruction in natural history, etc. Hartmann's limited use of *Märchen* should not only educate religious and other sentiments, but it should teach to apprehend and to tell again. After this practice for half a year Bible stories should come. The New Testament should precede the old, and all should center about the Jesus child. To fail of insuring close intimacy with Bible tales in early childhood is, we are told, one of the gravest of all pedagogical errors. The topic of this half year should be the nativity, the visit of the three wise men, Jesus in the temple, the wedding at Cana, the boy at Nain, the entrance to Jerusalem, the arrest of Jesus, his condemnation, death, and burial. This plan has been followed in close connection with the church year in Annaberg and with the best results. Even for narrative and educational values this has excelled all other material. This matter must be so treated as to evoke the greatest interest and participation and never at the same part of the year as the *Märchen*. Religious instruction should thus be the chief and central. It should select the matter and all it requires without reference to other branches, and in this sense only they should all be subordinate to it. The last sixteen pages are given to an outline or program for each of the 40 full school weeks of the German school year. This is divided as narrative matter and object-lesson matter. The first begins with a brief prayer and song, the first *Märchen* in the third week, and new and longer songs, prayers and tales, then proverbs and poems with Bible tales the last half year. The second begins with name, place in school, time, school days, movements, with use of slate, sponge and pencil in the second week, each child's home, street, parents' name, home life, fence, hedge, flowers, animals and birds seen on the way, garden tools, planting and sowing, riddles, drawing, then writing and reckoning, etc. Every object in the table is gone over with detail and many more. They draw dog houses, bird cages, mouse trap, spider's web, hat, lamp, stove, moon, star, cat, dish, sled, church, altar, christmas tree, knife and fork, wine bottle and glass, bed, tea cup and pot, hat, cap, gravestone, street lamp, city hall, book-case, slate, etc.

THE STUDY OF ADOLESCENCE.

By Wm. H. Burnham.

"We are born twice," said Rousseau, "once to exist and again to live; once as to species and again with regard to sex."[1] The importance of this second birth has been recognized in strange and significant ways.[2] It has been a world-wide custom to celebrate the advent of adolescence with feasts, ceremonies, and mystic rites. Among savages the power unflinchingly to endure pain is the usual test of manhood. The breaking out of a tooth, the stinging of wasps and ants, tatooing with a sharp stone, bleeding, circumcision, and the like, are among the means by which the close of childhood is celebrated and by which the endurance of young manhood is tried. Even among the ancient Anglo-Saxons it is said to have been a usual test of a child's courage to place him on a sloping roof. If he held fast, he was styled "a stout, brave boy." Everywhere it is a disgrace for a boy to give expression to his pain. He who loses his self-control is likely to be killed, to be banished to the quarters of the women, or in some way to be disgraced. He who unflinchingly endures, enters into the duties and privileges of manhood. The youth's emancipation is formally announced. He belongs no longer to the family, but to the tribe. In some cases a new name is given to the adolescent, in some ornaments are bestowed, in others a patrimony may be granted. Among civilized nations too, the passing of "the golden gates of childhood" has often been marked by feasts and ceremonies. The Romans had their feast of the *liberalia* when boys of sixteen (in later years at the age of fifteen) assumed the *toga virilis*. And among Christian nations puberty is the period of confirmation in the Church.

It is hardly fanciful to say that the cruel practices of savages are, in a crude way, analogous to the trial to which nature subjects us at the advent of adolescence. Puberty, as one writer has said, is the grand court of appeal by which weak children are weeded out, and only those who have sufficient vitality for life's battle renew their strength and continue their development; and, on the other hand, as the young savage who endures without a murmur the tortures to which he is subjected, is admitted to the rights, privileges, and possessions of manhood, so the adolescent who passes nature's ordeal, then enters upon his inheritance from the past.

---

[1] Emile, Book IV.

[2] See Ploss, *Das Kind*, Berlin, 1882, p. 411 ff.

Thanks to a long line of observers and writers from Pestalozzi to Perez and Preyer the importance of studying children is now generally recognized. But just as a study of the psychology of childhood is an indispensable part of the preparation of every teacher in the lower grades, so a study of the psychology of adolescence should form a part of the education of every teacher in the higher institutions. The subject should be studied scientifically from the standpoints of physiology, anthropology, neurology, and psychology; and in its ethical, social, and pedagogical relations. Complete data for such a study do not exist. But the purpose of the present article is to begin in a very small way the study of one phase of the subject, to illustrate some of the material for such study, and to make a few pedagogical inferences and suggestions.

The period of adolescence is, of course, subject to individual variations. It varies too, with race, sex, and climate. The advent of puberty seems to be somewhat earlier with inferior races, like the Africans, than with highly civilized nations. It occurs earlier with girls than with boys; and is hastened by a warm climate like that of Italy. Foster's Medical Dictionary puts the average period of adolescence as between the ages of 14 and 25 for boys, and 12 and 21 for girls. Italian usage, according to Billings' dictionary, makes the period from the age of 15 to 25 for boys; from 12 to 20 for girls. Clouston[1] distinguishes between puberty and adolescence. The former he restricts to "the initial development of the function of reproduction," and he uses the term adolescence "to denote the whole period of twelve years from the first evolution up to the full perfection of the reproductive energy." I shall use the term adolescence to denote this longer period. But the advent of adolescence, or the period of puberty, is, perhaps, more important than the later stages of adolescence.[2]

Physiological changes.. Everybody is familiar with the more obvious changes that occur at this period. The reproductive organs increase in size, the larynx enlarges, the vocal cords become elongated, the volume of the heart is increased. In the male the shoulders broaden, the muscles harden, and the beard begins to grow; in the female the pelvis increases in size, the bust develops, menstruation begins, and so on. Probably equally important changes occur in the brain; for the shape of the head changes, and the new intellectual and emotional activities of this period must be accompanied by the functioning of cerebral centres that have lain dormant before. This is, moreover, a period of specially rapid growth in both sexes. Key, who reports observations made upon 15,000 boys and 3,000 girls in Swedish schools, found that the boys showed a rapid increase in height and weight from their 14th to their 16th years.[1] A similar period of rapid growth appeared in the girls at a somewhat earlier age. Key found that this period of rapid growth, contrary to popular opinion, is a period of increased power to resist disease. In the period just before puberty the percentage of disease decidedly increases; then it decreases as the growth of the children increases. In the years immediately after puberty the curve of disease rises again. Key found the 17th year to be the most healthy, the 13th and 18th sickly.

---

[1] Mental Diseases, Lecture, XVI.

[2] Clouston, however, deems the later period more important. But it must be remembered that the character of the earlier period will in great measure determine that of the later.

Psychological Changes. The psychological changes at puberty are no less remarkable. There is a great influx of new sensations. The brain, aroused by these new stimuli, increases its activity. The psychic concomitant of this increased cerebral activity is manifested in a variety of ways. The adolescent mind is filled with hopes, dreams, tempestuous passions, and new ideas. Social and ethical impulses become dominant; egoism often gives place to altruism. Political or religious zeal sometimes becomes the main-spring of action. The reasoning powers come into use. At a somewhat late period philosophic speculation frequently becomes almost a passion; and philosophic and religious doubts are common. The whole period of adolescence is often one of mental storm and stress; and not unfrequently the cerebral over-strain results in insanity. This is the time for the most ardent interest in altruistic and philanthropic endeavor. "In the case of more highly endowed natures," says a German writer, "this yearning and striving grows beyond the limits of the individual personality and extends to plans for the reform of the world and of humanity. If these plans are turned toward concrete things and persons, for example, toward forms of government, then they may become dangerous and even lead to crime. Not only Harmodius and Aristogeiton, the murderers of tyrants twenty-three hundred years ago, were adolescents; but often the Nihilists of to-day are also."[2]

Teachers are not entirely unfamiliar with these psychic changes which occur at adolescence. Very few, however, have taken the trouble to make a detailed record of individual cases. But literature furnishes many examples of adolescent activity reported in detail with a vividness and frankness that would leave little to be desired were it not for the fear that the accounts are exaggerated, perhaps unconsciously, from literary motives. Making allowance, however, for the probability that some features are overdrawn or distorted, the great confessions and the great novels furnish valuable material for psychological study. Some of them furnish admirable illustration of adolescent activity. The first part of Rousseau's Confessions, Marie Bashkirtseff's diary, "The Story of an African Farm," Jefferies' "The Story of my Heart," and similar books, are cases in point. George Eliot has described many different types of adolescent character. Maggie Tulliver, with her enthusiastic self-renunciation alternating with "volcanic upheavings of imprisoned passions," with her "wide, hopeless yearning for that something, whatever it was, that was greatest and best on this earth;" and Tom with his energy and self-reliance, kept from waywardness by the wholesome prophylactic of work; Gwendolen Harleth with her intense desire for admiration, her impulsive activity, selfishness, and inchoate religious and ethical sentiment: these, perhaps, are the most striking examples. Of the last mentioned character Clouston says:

---

[1] See Key, *Schulhygienische Untersuchungen*, Hamburg, 1889.
[2] Scholz, Die Diätetik des Geistes, Leipzig, 1887.

> "It is most worthy of study by all physicians who look on mind as being in their field of study or sphere of action. From the time when, at the gaming-table, Gwendolen caught Deronda's eye, and was totally swayed in feeling and action by the presence of a person of the other sex whom she had never seen before; playing not because she liked it or wished to win, but because he was looking on, all through the story till her marriage, there is a perfect picture of female adolescence. The subjective egoism tending toward objective dualism, the resolute action from instinct, and the setting at defiance of calculation and reason, the want of any definite desire to marry, while all her conduct tended to promote proposals, the selfishness as regards her relations, even her mother, and the intense craving to be admired, are all true to nature."[1]

Of the more extreme form of adolescent activity bordering on neurosis no better description can be given than Marie Bashkirtseff's Journal. From the first childish experience of "the tortures of vanity," when every evening she prayed: "My God, grant that I may never have the small-pox; that I may grow up pretty; that I may have a beautiful voice; that I may be happily married; and that mamma may live for a long time to come," all through her short, high-pressure life with its vague aspirations, its unbounded ambition, and its tumult of emotions forcing her on "to live faster, faster, faster," up to the time when the fever of consumption mingled with the fire of adolescence and her intellectual activity became pathological, the young artist's character is worthy of psychological study. All the characteristics of her sex at the period of adolescence are described. Self-conscious, vain, imaginative, self-deprecatory, dreaming by day and by night, demanding unbounded love, hating moderation in everything, sometimes pathetically religious, making God her *confidant* in the ideal love-affair with the Duke whom she had never met, "tortured by jealousy, love, envy, deceit, wounded vanity, by every hideous feeling in the world," when the Duke marries, working with mad intensity for her ideals, with a passion even for "all those learned, patiently conducted, *abracadabrante* follies" of Kant and other philosophers, longing "to penetrate into the precincts of the intellectual world; to see, to hear, to learn;" wishing to be Cæsar, Augustus, Marcus Aurelius, Nero, Caracalla, Satan, the Pope, or all of them at once,—it is no wonder that so intense a flame soon burnt out, and that she died at the close of the period of adolescence. Perhaps the years of her life most interesting in connection with our subject are those from the ages of 14 to 17. I append her own description of her diary for those years:

---

[1] Op. cit., p. 546.

> "I have just been reading my journal for the years 1875, 1876, and 1877. I find it full of vague aspirations toward some unknown goal. My evenings were spent in wild and despairing attempts to find some outlet for my powers. Should I go to Italy? Remain in Paris? Marry? Paint? What should I strive to become? If I went to Italy, I should no longer be in Paris, and my desire was to be everywhere at once. What a waste of energy was there? If I had been born a man I would have conquered Europe. As I was born a woman, I exhausted my energy in tirades against fate and its eccentricities. There are moments when one believes one's self capable of all things. "If I only had the time," I wrote, "I would be a sculptor, a writer, a musician!" I am consumed by an inward fire, but death is the inevitable end of all things, whether I indulge in these vain longings or not. But if I am nothing, if I am to be nothing, why these dreams of fame, since the time I was first able to think? Why these wild longings after a greatness that presented itself then to my imagination under the form of riches and honor? Why, since I was first able to think, since the time when I was four years old, have I had longings, vague but intense, for glory, for grandeur, for splendor? How many characters have I been in turn, in my childish imagination! First, I was a dancer—a famous dancer—worshipped by all St. Petersburg. Every evening I would make them put a low-necked dress on me, and flowers in my hair, and I would dance, very gravely, in the drawing room, while every one in the house looked on. Then I was the most famous prima donna in the world; I sang and accompanied myself on the harp, and I was carried in triumph, where or by whom I do not know. Then I electrified the people by my eloquence. The Emperor of Russia married me; that he might be able to maintain himself on his throne. I came into personal relations with my people; I explained my political views to them in my speeches, and both people and sovereign were moved to tears. And then I was in love. The man I loved proved false, and was afterward killed by some accident, generally a fall from his horse, just at the moment when I felt that my love for him was beginning to decrease. When my lovers died I consoled my-

self, but when they proved false to me I fell into despair and finally died of grief. In short, I have pictured every human feeling, every earthly pleasure to myself as superior to the reality, and if my dreams are to remain forever unrealized, it is better that I should die."

In such cases, as has been said, one knows not how much allowance to make for the literary *motif*. Such important points too, as the concomitant physical changes, the environment, habits of life, ancestry, and the like, are not given with sufficient detail. With the hope of gaining data for a more definite knowledge of adolescent development, a circular was sent out from Clark University 18 months ago, requesting the coöperation of parents, teachers, and others, in collecting material for an anthropological study of adolescence. It was suggested that information upon the following points in regard to youth of both sexes between the ages of twelve and seventeen would be desirable:

Have changes or peculiarities been noted concerning:

1. *Sleep:* duration, soundness, posture in, readiness or reluctance to retire or rise.
2. *Dreams:* starts on going to sleep, talking or muttering, nightmare.
3. *Health:* especially digestion, muscular strength and endurance, exercise.
4. *Nervousness:* neuralgias, headaches, pain in limbs or other parts, irritability or worrying about tasks.
5. *Temper:* is it modified in excitability, violence, duration.
6. *Studies:* easier or harder, more liked or disliked, changes in tastes, relations and sentiments towards instructors.
7. *Tastes in reading.*
8. *Friendships* for the same or the other sex, confidences, green or first love, cronies, society, secrets.
9. *Self-consciousness:* as shown in bearing and manner, etc.
10. *Dress* and ornament.
11. *Conscience* and moral sense.
12. *Emotional* nature, impressionability.
13. *Quality of the Will*, perseverance, independence, enterprise, aims and purposes in life plans.
14. *Fears*, superstitions, signs, omens.
15. *Physical changes:* slower or more rapid growth, changes in looks, outcrop of ancestral ways, tricks, habits of gait, voice, inflection, gesture, taste, aptitude, etc.

Although too few reports have yet been received to furnish data for statistical study, the material in question has been placed in the hands of the writer with permission to use it in connection with data collected elsewhere relating to a later phase of adolescent development; [1] and a few indications may be noted as suggestive of points for further study. It must be remembered that the material is too meagre for any induction; and the points noted are given merely as suggestions. More sleep seems to be required; and the one point upon which the reports are almost unanimous concerns that daily returning trial of thrifty parents—the reluctance of their growing offspring to rise in the morning. The vividness of dreams seems enhanced as indicated perhaps by frequent mutterings in sleep. General health seems to be improved, but there is more nervousness as indicated by a tendency to worry, or by irritability and the like. A fondness for teachers is often reported, and there is some indication that the severer studies are better enjoyed than the easier ones. A tendency to care more for dress and ornament is apparent, although some are careless and slipshod. Conscience is accurate in some, while others show little moral sense. The will seems often to grow stronger; and courage is enhanced. Naturally, great physical changes are reported; and there seems to be some outcrop of ancestral ways.

---

[1] See below p. 182.

In the light of Prof. Key's investigations the most promising subject for further study in this field is, perhaps, the relation of the marked physical changes that occur at adolescence to health and to physical and mental activity. The reports just described mentioned some remarkable cases of physical growth. In one case a boy grew in one year by careful measurement between seven and eight inches. If, in such cases, the power to resist disease and the ability to perform physical and mental work during the years of maximum growth, were carefully noted, results of prime importance might in time appear. Another point of prime importance is the outcrop of ancestral ways. At adolescence there seems to be a great influx of hereditary strength and character. The boy of good blood who has been lazy, perverse, or reckless before, often becomes serious now and develops his latent manhood. For the boy with evil hereditary tendencies it is a dangerous period. One's inheritance from the past is the anchor which holds him in the storms of adolescence, or the impulse which drives him on to perversity and sometimes to insanity. At present, however, our knowledge upon this point is very general and indefinite.

The most definite and scientific material relating to the psychic activities of puberty concerns pathological cases. Puberty, like all periods of rapid growth, is a time of unstable mental equilibrium. Morbid, if not distinctly pathological, activities are very liable to occur. "In some instances," as Maudsley says, "the physiological evolution of puberty passes into a pathological revolution." Many different writers have described the insanities of puberty and adolescence. According to Maudsley [1] the mental alienation may take the form of either mania or melancholia. In the former case the characteristics are self-conceit, pertness, restlessness, capriciousness, so-called hysterical, or "involuntary wilful" acts, and the like. In the latter case the patient becomes dull, listless, suspicious, perverse, and shows great apathy of feeling. Clouston says that "the insanity of puberty is always a strongly hereditary insanity." While its immediate cause may be some irregularity in adolescent development, its real cause is hereditary, "having for its object this higher physiological law, that the reproduction of the species tends to stop when the inherited tendency to brain disease acquires a certain strength in any individual."[1]

---

[1] Pathology of Mind, p. 450 ff.

Medico-legal experts have called attention to cases of incendiarism, poisoning, cruelty, and murder, where crimes were committed by young people who seemed to have no feelings of animosity against their victims. And Kahlbaum and Hecker[2] have described a special kind of insanity characteristic of pubescence called *hebephrenia*. This according to Kræpelin is "characterized by the change in the superficial emotional conditions; odd, fantantic delusions, eccentric behavior; and the quick passage to dementia."[3] In the female sex the mental activity seems to bear a peculiar relation to the function of menstruation; and many forms of alienation occur in girls. Icard in a recent thorough study defends and illustrates the following thesis: "The menstrual function can, by sympathy, especially in case of those predisposed, create a mental state varying from simple psychalgia, that is, simple *malaise moral*, simple disturbance of mind, to alienation, to complete loss of reason, and modifying moral responsibility from simple extenuation to absolute irresponsibility."[4]

From the observations that have been made one inference is obvious. It is this: There is at puberty a great increase in vitality and energy. This is manifested by the rapid growth at this period, by the increased power of resisting disease, by the greater mental activity, and the like. The great evolution of energy and the corresponding influx of emotional vitality may objectify itself in many different ways. With some it may result merely in greater physical activity. With others it gives an impulse to intellectual work; with still others it leads to social and altruistic activity. A love affair, poetry, religious or political fanaticism, bizarre actions, general perversity, and insanity, are all possible outlets. The whole subject is most complicated. It involves the most profound questions of life and of heredity. What the phenomena of adolescence may be in any given case depends largely upon one's general health, education, hereditary tendencies, temperament, and the like. If we attempt to analyze the phenomena in a concrete case, the normal and abnormal appear inextricably interwoven. There is a mixture of good and bad, of the highest ideals and of extraordinary notions, of the highest moral and religious emotions and of self-consciousness and low passions.

---

[1] Op. cit., p. 533.
[2] Virchow's Archiv. Bd. 52 p. 394 ff.
[3] See "Ueber Heboïdophenie." Amer. Jour. of Psychol., Vol. III, p. 214.
[4] See La femme pendant la période menstruelle. Paris, 1890. See also for good pedagogical suggestions E. H. Clarke: The Building of a Brain.

When we pass to what Clouston calls the more important period of adolescence, say from eighteen to twenty-five, the phenomena are equally complicated. In the healthy adolescent the impulses that arose at puberty persist and become more profound; but the concomitant development of reason puts them under better control. It is the period of great plans for the future. "Longfellow's youth that vaguely cried 'Excelsior,' was evidently at this stage of life," says Clouston. Altruistic emotions, especially for the other sex, are likely to become dominant. Life for the first time, perhaps, begins to look serious. The young man has come into possession of his inheritance from the past; and during this period of adjustment to new conditions, philosophic or religious storm and stress are not uncommon. And soon an habitual form of activity along some line which is the resultant of heredity, environment, and individual choice, becomes dominant. Some one of the multitudinous interests of adolescence persists and becomes the support of future action. This period, like the earlier years of puberty, is one of unstable equilibrium, and pathological cases are not uncommon. Distinct cases of insanity seem to be even more frequent between the ages of 20 and 25 than in the earlier years.[1] The whole period is likely to be one of intense mental activity. This activity is sometimes of one kind, sometimes of another. One form of this activity, that of doubt with its accompanying emotional agitation, I am able to illustrate at some length.

[illegible]

A few years ago, under the direction of President G. Stanley Hall, the writer endeavored to collect some data in regard to the function of doubt in adolescent development. A circular letter was sent to a few students, most of whom were specially interested in philosophy, requesting them to report the function of doubt in their own development, and to describe any storm and stress period that might have occurred in their experience, giving details in regard to age, environment, and the like. Letters giving personal experiences were received from twenty persons. Although the number of my correspondens was small, different nationalities and different forms of education were represented; and the writers replied with so much frankness and detail that their letters furnish valuable material for illustrating one at least of the many forms of adolescent activity, i. e., philosophic and religious thinking in its different phases. At the time of replying to my letter most of my correspondents were just past the period of adolescence or near its close. Three-fourths of them had passed through a more or less disturbing period of doubt. A few eupeptic men seemed to have had no touch of a storm and stress experience. In the majority of cases the beginning of the doubt concerned matters of religion. In a few cases it was more strictly intellectual. In one case it was very short and violent; in most it was prolonged, in some covering many years. A cause frequently assigned was narrow religious training. Many deemed such an experience normal. In some cases, however, it was clearly abnormal, not to say distinctly pathological. It is noteworthy that in half the cases there was considerable emotional excitement. In a few cases the emotional stress was extreme. In many cases the solvent of the doubt was found in reason leading to new hypotheses or proving the old. Among the remedies suggested by different writers were more rational religious education, action, growth, absorption in secular pursuits, the reading of Christian apologists and biographies of men who had passed through a period of storm and stress, an active interest in the moral improvement of others, historical study of the life of Christ, and general judicious instruction. Among the results of this doubt experience mentioned by different writers are a better understanding of literature, an increased insight into the character of men, greater love for humanity, more toleration, greater desire for further knowledge, "a stimulus to tolerant intellectual development," a more vital faith, a readiness to leave "many questions still open and unsettled."

---

[1] See Clouston, op. cit., p. 558.

I add the following illustrations from these returns:

Of those who had been practically free from doubt, one had strong faith, and looked upon philosophy as "all human speculation." Another attributed his freedom from philosophic doubt to the reading of Law, begun at the same time with his study of philosophy. A third did heavy manual work at the period of adolescence, and so escaped the storm and stress experience, while later, when he "reached the Berkelean philosophy," he was saved from doubt because he "already possessed the Kantian corrective." A fourth, who had been successful in his education in spite of unusual physical hindrance, reported that doubt with him had been almost purely intellectual, and that to it he owed more than to anything else his education. A fifth was a dreamer in childhood; but at the age of seventeen "the bread and butter problem" intervened, and for the next ten years he was "so completely absorbed in the solution of this practical question" that he had little time for philosophic thought or speculative reading. Four other correspondents reported that doubt had played a considerable rôle in their experience, but mentioned no very serious emotional disturbance. One of these, who had passed from Confucianism to Christianity, and, finally, had worked out his own system of positivistic philosophy, resolved at the age of eighteen or nineteen to devote his life to the study of the relation of mind and body.

Another, owing to the advantages of his education, and a fortunate choice of reading, reported that the course of philosophic doubt with him had been "one of evolution rather than of revolution." But his case admirably illustrates a not uncommon feature of adolescent experience—the desire to get away from the world. Not only is adolescence the period of altruistic emotions, but then first the *Naturgefühl* is felt; and, reacting from the first experience of the world's confusion and complexity, the youth is attracted by the beauty and simplicity of what seems life according to nature. The following passage from my correspondent's letter shows this desire for simplicity resulting from a certain despair of adjusting self to environment and of finding in the world any worthy form of activity.

"The only period which can be termed one of storm and stress," he says, "was when philosophic doubt was added to doubt concerning conduct. I had reached that point in this doubt at which it seemed that each one had a natural inclination to some trade or art, and that ill success and sin, to a great extent, came from discouragement brought about by his trying to stumble along with some other. Therefore I said, if one could learn his talent and live up to it the world would be happier. I was trying to find a method of discovering that inclination, but had made up my mind that it was impossible because a whole lifetime might be spent before making a lucky hit. So the next best thing seemed to me to turn farmer or farmer-hermit, and get that vitality and solidity of character which is the result of such a life, and which forms the foundation and back-bone of the state. * * * I took long walks alone in the afternoons and read Stanley, John Burroughs and Thoreau in the evenings."

The remainder of my correspondents had passed through pretty severe storm and stress experiences. Their reports are very valuable psychological documents. The letters are too frank and personal to be given in full. But I add a few selections which describe, as I believe, typical experiences.

The following is from a letter that reports extreme doubt but no violent emotional agitation. It shows, perhaps, the natural reaction of a logical mind against dogmatism. My correspondent's doubt began by fancying that he "succeeded better in matters not prayed for than in those that were." This led him to investigate the theory of prayer that had been taught him, and he adds: "The doubting process thus begun was carried on, being always stimulated by fresh discoveries of the error of early beliefs. It will be noticed that this skepticism was directed solely against *authority*. I was not conscious that God had deceived me, or the world, or nature, or the senses, but men, authorities, teachers, preachers, writers. My distrust therefore in authority increased until I arrived at that sort of universal skepticism which consists in a disposition to accept no statement of authority till examined and verified by my own reason—in other words, a kind of universal skepticism. But what should be the standard of judgment by which my reason should verify questioned facts? The only solution of this problem that I found was a system of averages and balances. Universal agreement was the ideal, and, where this could not be found, allowance must be made for the probable individual bias. This belief in a real truth lying somewhere intermediate between the adverse testimony of different witnesses, saved me from a radical skepticism, and, of course, from anything like despair, and even from a "storm and stress" period. This kind of doubt was rather a constant and steady stimulus to inquiry. The result therefore was healthful in that it incited me to study, and carried me through the iconoclastic period to the reconstructive one that followed. Nor do I think that I was ever led to any real pessimism. I never really doubted that God was good, or that the world was rational and friendly, but I found that men had presumed to dogmatize on a great many subjects which they knew nothing about. I had therefore a kind of misanthrophy, but even this form of pessimism tended to yield—as I learned to study men themselves and to see how manysided is what each calls truth—to a vigorous hatred only of intolerance."

The following shows the logical tendency with more emotional agitation:

"One of the most vivid pictures of childhood is that of a little room and my surroundings one day when I asked myself who caused God—if we must seek a cause for the world why not also for God? Reared in the midst of New England orthodoxy, it is not strange that I was startled by the bravado of my own thought. This, however, was but one of the first shadows of the approaching storm. Not many years later, at the period of adolescence, the imperative necessity of working out my own metaphysical salvation was upon me. This I certainly did with fear and trembling. My whole creed was over-hauled. It is hard to recall vividly the emotions of the past, but I do remember that the emotional stress was great. I knew of no one about me to whom I felt willing to tell my doubts—I need not say that I was in misery—I performed my daily duties without interest—indeed, I think I had too much leisure, and my work was such that I could think while at work. I do not remember that I was ever led to pessimism. . . . There were several provisional adjustments in my creed, but the time for laying a more permanent foundation came during college life—if I mistake not the culmination was during the leisure of a summer vacation. Everything was challenged, and everything almost seemed opened to doubt; but, finally, I reached bed-rock in the following propositions: There is such a thing as truth, whether I can ever find it out or not—if the truth were known there would be a best way to live in view of the truth—the wise thing to do is to walk in the light of what truth is known, and constantly to strive for new truth. This was a solid foundation—on this I might build but little, but that little would stand."

Another correspondent, who reports that the first function of doubt in his development was "the revolutionary one of changing early convictions," thus describes a prolonged storm and stress experience tending to pessimism:

"It was between the ages of nineteen and twenty-three. The environment was orthodox Presbyterianism. Doubt extended to everything except material and conscious existence. Pessimism I have realized to its full extent, although I had no difficulty in seeing and knowing what was right and what was wrong. The difficulty was to believe that the universe was at all governed by conceptions which I knew to be right; whether the providential government affirmed of things was at all so comfortable and desirable a dispensation as the normal and altruistic sympathies of men would judge that it ought to be."

Another correspondent whose period of adjustment was prolonged, reported that doubt with him "was not in the first instance of a philosophical color, but rather religious and ethical. The *motif* of the whole experience was emotional rather than intellectual, a desire for mental stability rather than a genuine interest in philosophic problems." He illustrated his storm and stress experience by poetry written at the time The theoretical position finally reached was that of cutting the knot and doing altruistic deeds without reasoning out any course of action.

The main features of one of the most extreme cases were somewhat as follows: My correspondent was educated in the religious environment of a Puritan family. As early as the age of fourteen, probably, his sceptical tendencies began. He felt that God was gone from the world. The emotional stress in his case was very great; he felt himself a sinner in having doubts, and yet found no escape. This condition lasted through his college course. Life seemed empty. The relativity of good and evil undermined the ethical standing-ground. A few years of travel did not hinder the contest, that raged with perhaps increased fury. He was possessed with gloomy views of life, of its utter uncertainty and of the absence of anything in it that could be taken up with whole-hearted courage. For a time there was emotional and ethical pessimism of an extreme sort. Perhaps the first reaction against this state of doubt showed itself in a kind of pantheism resting upon the *beauty* rather than the *order* of nature. Finally, the fixing of more certain religious views came with an objective study of the life of Christ. He adds that the whole fight was made single-handed and that he was hurt rather than helped by religious instructors.

The following also reports a violent experience of religious doubt; but, unlike the preceding cases, the storm and stress period was short, followed by unusual sunshine and calm.

"At the age of twenty I entered a Theological Seminary, and remained there four years. The third year I became a member of a Conversational Club whose motto was the Hebrew for "We stand (are) united for investigation." During the course of our studies in Rationalistic Biblical Criticism, a night was devoted to discussion of the Fourth Gospel, the author of the essay taking ground against the historical validity of this gospel, regarding it as a sort of philosophic writing on certain phases of Christian teaching. I remember the reader's last sentence. "*The Fourth Gospel is a Great Epic.*" By this essay the flood-gates of doubt were opened upon me. For three days the wild tide swept and surged past and around me. I felt I must give up the Gospel of John, and if so, my Christian faith also, and with this the universe would go. I have never scrutinized closely the experience of those three days. I prayed. I *yielded* myself to what I conceived to be Higher Guidance. I yielded with trembling but with importunity. At the close of the period I found myself at one with all things. Peace, that was all. It was like a new birth. Whence it came I could not tell. I have spoken of it as a time when light from heaven came to me. When I looked at myself, I found I was standing on the old ground, but cherishing a toleration of doubt and a sincere sympathy with doubters, such as I had never known before. I was the same and yet *not the same*. You see then, that my doubt was not strictly philosophic but religious, at least in its beginnings. I have not been disturbed since the time I have described. During that same year I read a paper before the Club which greatly perplexed many of the members. I had worked up the objections to the first and second chapters of Luke, and during all my reading on the subject, strange to say, the arguments seemed not to enter into my thinking. There was no appropriative faculty and capacity for them in me. They stood apart from me. I could take the logical standpoint, and could see that they were quite convincing, and yet my inward peace of belief was in no way disturbed. Indeed, nothing seems capable of moving me from my stand-point. It is clear and definite to my own mind and satisfactory withal."

Another case, likewise extreme, is in many respects typical of doubt ethical rather than religious.

> My correspondent writes that all his trials resolved themselves into the one question, "Is there anything in this world which your abilities and training fit you to do well?" He worried for fear that he should not come up to his friends' expectations, so that he could neither study nor indulge in any recreation. "Day after day," he adds, "I walked about in a perfect agony, cursing the day I was born. I could not bear to think of failure, and if any one would have taken the responsibility of putting me out of the world, in an easy and expeditious way, I think I should have been grateful to him. The thought of my mother was the only thing that kept me at all steady. All this seems very absurd now of course, it was nothing but the death pangs of an over-strained personal vanity. Every young man who has had a disposition and education similar to mine, has probably been through a like baptism of fire. But absurd as it may have been, it was still very real and very painful."

This same pessimism, absorption in self and yet distrust of self, are well described by Carlyle.

> "Alas!" says Teufelsdröckh, "the fearful unbelief is unbelief in yourself; and how could I believe? Had not my first, last Faith in myself, when even to me the Heavens seemed laid open, and I dared to love, been all-too cruelly belied? The speculative Mystery of Life grew ever more mysterious to me; neither in the practical Mystery had I made the slightest progress, but been everywhere buffeted, foiled, and contemptuously cast out. A feeble unit in the middle of a threatening infinitude, I seemed to have nothing given me but eyes, whereby to discern my own wretchedness. Now when I look back, it was a strange isolation I then lived in. The men and women around me, even speaking with me, were but Figures. I had practically forgotten that they were alive, that they were not merely automatic. In midst of their crowded streets and assemblages, I walked solitary; and (except as it was my own heart, not another's, that I kept devouring) savage also as the tiger in his jungle. To me the universe was all void of Life, of Purpose, of Volition, even of Hostility; it was one huge, dead, unmeasurable steam-engine, rolling on, in its dead indifference, to grind me from limb to limb. Oh the vast, gloomy, solitary Golgotha, and Mill of Death. Why was the Living banished thither companionless, conscious? Why if there is no Devil; nay, unless the Devil is your God?"

It is noticeable that in such cases the person seldom actually commits suicide. An unconscious clinging to old beliefs or mere inertia holds one back. To continue with Carlyle:

> "From Suicide a certain after-shine (*Nachschein*) of Christianity withheld me; perhaps also a certain indolence of character; for, was not that a remedy I had at any time within reach? Often, however, was there a question present to me. Should some one now, at the turning of that corner, blow thee suddenly out of Space, into the other world, or other no-world by pistol-shot—how were it? On which ground, too, I have often, in sea-storms and seiged cities and other death-scenes, exhibited an imperturbability, which passed, falsely enough, for courage."

In many of the cases cited the doubt seems to have been the result of a necessary reaction against narrow religious training. But narrow religious training is not the only course. Narrow ethical training of any kind may result in similar disturbance. Readers of Mr. John Stuart Mill's Autobiography will at once recall the remarkable chapter where he describes his own storm and stress experience. Mr. Mill was not merely educated according to the strictest sect of the Agnostics; but his father taught him that "the *ne plus ultra* of wickedness" was "embodied in what is commonly presented to mankind as the creed of Christianity."[1] He grew up in a negative state with regard to religion; but parental authority had an unusual influence in his education, and for the first twenty years of life he was the mouthpiece of his father's opinions. Then came the crisis in his mental history, which he describes as follows:

> "It was in the autumn of 1826. I was in a dull state of nerves, such as everybody is occasionally liable to; unsusceptible to enjoyment or pleasurable excitement; one of those moods when what is pleasure at other times becomes insipid or indifferent; the state, I should think, in which converts to Methodism usually are, when smitten by their first 'conviction of sin.' In this frame of mind it occurred to me to put the question directly to myself: "Suppose that all your objects in life were realized; that all the changes in institutions and opinions which you are looking forward to, could be completely effected at this very instant; would this be a great joy and happiness to you?" And an irrepressible self-consciousness distinctly answered, "No!" At this my heart sank within me; the whole foundation on which my life was constructed fell down. All my happiness was to have been found in the continual pursuit of this end. The end had ceased to charm, and how could there ever again be an interest in the means? I seemed to have nothing left to live for."[2]

If there had been any hereditary tendency to insanity, Mr. Mill's state of mind would probably have developed into melancholia. "The lines in Coleridge's Dejection," he says, "exactly describe my case."

"A grief without a pang, void, dark, and drear,
A drowsy, stifled, unimpassioned grief,
Which finds no natural outlet or relief
In word, or sigh, or tear."

Mr. Mill found no relief his favorite books. Having no intimate friends, and feeling that his father would neither understand him nor sympathize with his mental state, he kept his grief to himself. He had been taught that all mental and moral feelings were the result of association, but now it seemed to him that his teachers had not found the proper means of forming and keeping up salutary associations. The hedonistic doctrines in which he had been brought up now seemed to him inadequate for the practical needs of life.

"To know," he says, "that a feeling would make me happy, if I had it, did not give me the feeling." Precocious and premature analysis became the inveterate habit of his mind. He adds: "I was thus, as I said to myself, left stranded at the commencement of my voyage, with a well-equipped ship and a rudder, but no sail; without any real desire for the ends which I had been so carefully fitted out to work for; no delight in virtue, or the general good, but also just as little in any-

---

[1] See Autobiography p. 41.
[2] Autobiography, p. 133 ff.

> thing else. The fountains of vanity and ambition seemed to have dried up within me, as completely as those of benevolence. I had had (as I reflected) some gratification of vanity at too early an age; I had obtained some distinction, and felt myself of some importance before the desire of distinction and of importance had grown into a passion; and little as it was which I had attained, yet having been attained too early, like all pleasures enjoyed too soon, it had made me *blasé* and indifferent to the pursuit. Thus neither selfish nor unselfish pleasures were pleasures to me. . . . These were the thoughts which mingled with the dry, heavy dejection of the melancholy winter of 1826-7. During this time I was not incapable of my usual occupations. I went on with them mechanically, by the mere force of habit. . . . In all probability my case was by no means so peculiar as I fancied it, and I doubt not that many others have passed through a similar state; but the idiosyncrasies of my education had given to the general phenomenon a special character, which made it seem the natural effect of causes that it was hardly possible for time to remove. I frequently asked myself, if I could, or if I was bound to go on living, when life must be passed in this manner. I generally answered to myself that I did not think I could possibly bear it beyond a year."

Gradually, however, Mr. Mill escaped from this gloom, although he had several relapses. An anti-selfconsciousness theory now became the basis of his philosophy of life, and the cultivation of the feelings became one of the cardinal points of his creed. It is certainly noteworthy that in cases where early education was so diverse such similar storm and stress experiences should occur.

Biographies and novels furnish much material for study. Among the former those of Savonarola, Goethe, Shelley, Newman, and George Eliot, will serve as examples. Among the latter the religious novels especially portray the psychology of adolescence. "Robert Elsmere" furnishes several illustrations. Rose is a good example of the strong emotions and ambitions of a healthy girl in the adolescent period. Langham shows admirably some features of the morbid, self-distrustful type tending toward melancholia. Elsmere furnishes a fairly good example of the adolescent in religious storm and stress. But this novel is especially interesting as a symptom. People take the deepest interest, as an English critic [1] has said, in any description of religious struggles. Religious self-consciousness,—or what the same critic calls the habit "of constantly feeling the moral pulse, and hourly asking oneself if the religious digestion is exactly as it ought to be"—is a characteristic of the present age.

A most powerful description of adolescent storm and stress is given in "The Story of an African Farm."

> Waldo, at the age of seven was "exotically virtuous" and profoundly religious." Shrewd questions, however, begin to arise in his mind even then. "Then a new time comes, of which the leading feature is, that the shrewd questions are asked louder. We carry them to the grown-up people; they answer us, and we are *not* satisfied." Interest in the

---

[1] Mr. Tyrell, Fortnightly Review, May, 1889.

world of sense begins to be lost, and a sort of mysticism begins. The account goes on as follows:

"And now between us and the dear old world of the senses the spirit world begins to peep in, and wholly clouds it over. What are the flowers to us? They are fuel waiting for the great burning." * * *

"The Bible we bear always in our breast; its pages are our food; we learn to repeat it; we weep much; for in sunshine and in shade, in the early morning or the late evening, in the field or in the house, the Devil walks with us. He comes to us a real person, copper-colored face, head a little on one side, forehead knit, asking questions. Believe me, it were better to be followed by three deadly diseases than by him. He is never silenced—without mercy. Though the drops of blood stand out on your heart he will put his question. Softly he comes up. (we are only a wee bit child): 'Is it good of God to make hell? Was it kind of him to let no one be forgiven unless Jesus Christ died?' Thus the questionings and preternatural imaginings continue; then a reacton and a "deadly delicious calm;" then the questionings again. So "the old life goes on—reading, praying, weeping, praying." Then a time of sleeping, and a dream of a beautiful deity. Then the time of waking, and life shows "new-made graves with the red sand flying about them; eyes that we love with the worms eating them, evil men walking sleek and fat, the whole terrible hurly-burly of the thing called life." After this "long hot delirium, peopled with phantasies," a new life cold as an iceberg; for Waldo has no God. Then the pessimism overleaps itself; and action, the remedy for all despair, is tried. "Existence is a great pot, and the old Fate who stirs it round cares nothing what rises to the top and what goes down, and laughs when the bubbles burst. And we do not care. Let it boil about. Why should we trouble ourselves? Nevertheless the physical sensations are real. Hunger hurts, and thirst, therefore we eat and drink; inaction pains us, therefore we work like galley-slaves. No one demands it, but we set ourselves to build a great dam in red sand, beyond the graves. In the gray dawn before the sheep are let out we work at it. All day, while the young ostriches we tend feed about us, we work on through the fiercest heat. The people wonder what new spirit has seized us now. They do not know we are working for life. * * * At night, alone in our cabin, we sit no more brooding over the fire. What should we think of now? All is emptiness. So we take the old arithmetic; and the multiplication-table, which with so much pains we learned long ago and forgot directly, we learn now in a few hours and never forget again. We take a strange satisfaction in working arithmetical problems. We pause in our building to cover the stones with figures and calculations. We save money for a Latin Grammar and an Algebra, and carry them about in our pockets, poring over them as over our Bible of old. We have thought we were utterly stupid, incapable of remembering anything, of learning anything. Now we find that all is easy. Has a new soul crept into this old body that even our intellectual faculties are changed? We marvel, not perceiving that what a man expends in prayer and ecstasy he cannot have over for acquiring knowledge. You never shed a tear, or create a beautiful image, or quiver with emotion, but you pay for it at the practical, calculating end of your nature. You have just so much force; when the one channel runs over the other runs dry."

It would be easy to multiply illustrations from literature.[1] Space remains for only one more. James Sully has described the religious experience of George Sand.[1] "From her mother, ardent, imaginative, and of a 'simple and confiding faith,' she had caught some of the glow of a fervent piety. Then she suddenly passed into the chilling air of Nohant and the grandmother, a disciple of Voltaire, and equalling her master in cynical contempt of the revered mysteries." Then with her daring imagination she formed her own private cult with a new divinity, with sacred songs, and ritual, and temple. Then she was a tomboy at the English convent, then converted in a storm of religious emotion, and, finally, she settled down into calm and quiet. These were the phases of this strange girl's religion.

---

[1] See, for example, "Robert Falconer, and other of George MacDonald's novels, also much of the literature referred to in Deschamps' Les névroses et le pessimisme, Paris, 1888.

The cases to which I have referred show the varied forms of experience, from the doubt that ~~that~~ is a needed stimulus to thought and a wholesome reaction against authority, to the extreme cases which seem to be on the borderland of insanity. It would be wrong to infer that such storm and stress experiences come only at adolescence. One of the letters referred to above, Tolstoi's "Confession," Amiel's "Journal," and other biographical sketches, furnish examples of similar experiences in later life. Nor is religious and philosophic doubt the only form of emotional tumult at adolescence. But such is a single phase of adolescent activity. If, instead of taking students of philosophy, I had chosen twenty young poets, artists, musicians, or politicians, their activity would probably have been different, but perhaps equally intense.

Were it not that the importance of this period is often forgotten, it would be too commonplace to speak of the ardent activity of adolescents; for we take it for granted. An astonishingly large amount of the world's work has been done by them. To recount what has been done by young men before the age of thirty would be to re-write a large part of the world's history. Alexander and Napoleon among soldiers, Hamilton and Fox among statesmen, and Bryant, Shelley, and Byron among poets, are only the most familiar examples. Even when the work has not actually been done at this period, the inspiration and the stimulus came then.

The letters cited above strongly corroborate the common observation that the period of adolescence is the time of genuine interest in philosophic studies. It would be foreign to the purpose of this article to consider the interesting question of the function of doubt in philosophy. But confining ourselves to the "natural history" of the subject, it is tolerably clear that the incentive to philosophic thought generally comes at adolescence. Not a few philosophers have written some of their best work during this period. At 22 Leibnitz had written several works, among them two philosophical essays. Berkeley published his "Essay on the Theory of Vision" when he was 25, and "The Principles of Human Knowledge" the next year. Hume wrote his Treatise on Human Nature when he was in the twenties. Fichte wrote his "Aphorisms on Religion and Deism" and his "Critique of all Revelation" before he was 30. Schelling wrote his work on the possibility of any Form of Philosophy when he was 19, published his "Ego as Principle of Philosophy" when he was 20, and began to lecture at the University of Jena when he was 23. One of Schopenhauer's best works, The Fourfold Root of the Principle of Sufficient Reason, appeared when he was 25; and his chief work, *Die Welt als Wille und Vorstellung*, was published when he was 31. At 20 Herbart had written several philosophical essays; and at 22 Beneke had published his first three works ("Outlines of the Science of Cognition, Empirical Psychology as the Basis of all Knowledge, and his Doctor's Dissertation"). Lotze's *Metaphysik* appeared when he was 24; Hartmann published his *Philosophie des Unbewussten* at the age of 27, and wrote it several years earlier; and Jonathan Edwards, probably the greatest of American philosophers, wrote some remarkable philosophical speculations in his "Notes on the Mind" when he was a boy of 16.

---

[1] See Longman's Magazine, Dec., 1889, and May, 1890.

Another phase of adolescence is illustrated in the poetry of the modern romantic school. The great influx of emotional life at the threshold of manhood has already been mentioned. In natures where education and hereditary tendencies check emotion's natural outlet in action, emotion itself becomes the aim of life. Shelley, Byron, Novalis, and perhaps both Gœthe and Schiller in their younger days, are examples. With these adolescents the hunt for intense and lasting emotion goes vigorously on, but since emotion seems to be subject to the psycho-physic law which applies to sensation in general, and an emotion can be sustained only by constantly increasing stimuli, and since emotion itself, as Mr. Mill found, is apt to vanish if made an end and analyzed, they are doomed to failure, and pessimism is the inevitable result. Much of modern poetry has never outgrown this pessimism.[1] The first sign of returning sanity was, perhaps, the defiance of the universe expressed by some of the poets of the storm and stress period of literature in Germany.[2] This defiance translated into English prose is powerfully expressed by Carlyle in the chapter on the Everlasting No in "Sartor Resartus."

The true solution is found in Gœthe's Faust. The aim should be, not the ideal emotion, but the ideal activity. Carlyle's advice, "close your Byron, open your Gœthe," is hygienic. And Carlyle himself in his blunt way is always preaching the Gospel of work. He closes his chapter on the "Everlasting Yea" with the words: "Produce! Produce! Were it but the pitifulest infinitesimal fraction of a Product, produce it in God's name! 'T is the utmost thou hast in thee; out with it then. Up! Up! 'Whatsoever thy hand findeth to do, do it with thy whole might.' 'Work while it is called To-day, for the Night cometh wherein no man can work.'"

---

[1] See Prof. Royce's "Religious Aspect of Philosophy," Ch. V.

Space does not permit a discussion of the important bearings of our subject upon ethical and religious education, nor can the equally important subject of sexual hygiene [1] be considered. Most of what has been written upon the mental hygiene of adolescence has been of a general nature. In fact, no very definite directions can be given until the psychology of adolescence has received more study. A few pedagogical inferences are obvious however. A concomitance of physical and psychic development at this period is clearly apparent. It is hygienic for the more strictly physical to take the lead. Just as in childhood, physical development should take precedence, since improper stimuli, such as unduly difficult studies, prematurely employed, are liable to cause arrest of development, so at adolescence, the advent of puberty should not be hastened by social excitement and the reading of erotic literature, nor should a mental storm and stress period be precipitated by disturbing philosophic and religious instruction.

It is evident that there is a great evolution of energy at adolescence that must find outlet in some way. Activity is imperatively necessary. It is clear that at this period education must no longer be mere acquisition, it must give outlet for action. Youth must be given an opportunity to do something. With many this is necessary for mental balance and sanity; for all it is a means of saving waste of energy. It is the period for manual training, for work in the laboratory, for physical training, sports, excursions, and the like. It is moreover the period for manifold activities. If ever Herbart's many-sided interest may be aroused it is now. Balance should be obtained by presenting many things. Undue tendency to introspection must be checked by allurements to action. Exaggerated ambition and unreflecting activity should be balanced by serious studies. It is the period for getting a start in the active sphere as well as for introspective psychology, philosophic thought, and the development of reason.

---

[1] Upon religious education see below the succeeding article in this journal. On sexual hygiene see Fothergill: The Physiologist in the Household, Part I, Adolescence, London, 1880.

Girls have suffered more than boys, perhaps, by the neglect of active education in the past. Among respectable institutions it would be hard to find a worse place for the education of an adolescent than the old-fashioned boarding school for young ladies, with little mathematics, no science, no adequate provision for physical exercise and recreation, in short, with little activity of any kind except piano-playing. Clouston's exclamation apropos of over-pressure in the education of girls is especially pertinent here. "Why should we spoil a good mother by making an ordinary grammarian?"[1]

Again the great increase of energy at adolescence shows itself in a great influx of emotional vitality. Modern psychology has shown the fundamental importance of the emotions as the support of mental activity, and the necessity of economizing emotion. The cases cited above show the great waste and emotional prodigality that are liable to result from improper education. The grand pedagogical aim should be to utilize the tempestuous emotions of adolescence. We find an economic principle everywhere in nature. Even the most complex processes tend to a minimum of complication. Perhaps this is nowhere better illustrated than in the normal development of the human organism. If we confine ourselves to the psycho-physic mechanism we find the law of economy everywhere one of the best statements of its activity. As soon as the nervous system acquires a new habit it short-circuits the process. The functioning of mechanical activities seems to be relegated to lower centers. Unessential movements are excluded; and motor and sensory processes become in large part synchronous. The same law prevails in the higher activities. We ignore superfluous sensations. Associative processes overlap. We pick out the interesting and essential elements in our trains of thought and dwell upon them. We skip the more familiar links in our reasoning, and abridge the tardy process of logical thought by what we call *intuition*. Even our philosophic systems and scientific theories, whatever else they may be, are economic devices by which we unify the facts of experience, and save ourselves from distraction amid the world's manifold phenomena. Even they whose philosophic creed is to have no system may be agnostics for economic reasons. Such economic devices are necessary for our sanity. At adolescence some provisional system often saves the youth from despair; and in paranoia, where reasoning becomes a mania, some sort of system, perhaps objectified in a diagram, is the last wretched raft by which the poor mind tries to keep itself afloat in its multitudinous and tempestuous sea of thought.

---

[1] Op. cit., p. 537.

Before Rousseau, Pestalotzzi, Locke, or Comenius, at least as far back as the days of the Greek Sophists, arose the ideal of education according to nature. If we keep ourselves pure from idolatry of abstractions this ideal is a good one. From its standpoint waste is sin. But under present educational conditions there often occurs at adolescence an emotional prodigality that is unnatural and dangerous. This is shown in the phases of adolescent activity illustrated above. Doubt is a natural and healthy form of intellectual activity; but such emotional storm and stress as occured in the extreme cases cited is liable to leave one devoid of that healthy enthusiasm necessary for the most effective work. To-day the aim of educators is to exclude the unessential from courses of study and to save time imperatively needed in the education for life. But when this aim is accomplished the waste will be only partly checked. It is likewise necessary to stop the waste of energy. While perhaps the greatest waste of time in American schools occurs in the lower grades, the greatest waste of energy occurs during the period of High school and College education. Great interests are not utilized, and the adolescent need of activity is often ignored. The healthy adolescent overflows with life. His supreme demand is contact with life. He must be active; and his activity must have relation immediate or prospective with the world about him. Secondary and higher education must consider this demand. In the perennial problem of the sciences versus the classics, in the question of shortening the college course, and the like, the need of activity in young *Stürmer und Dränger* must not be ignored.[1]

---

[1] In addition to the literature cited above, the following may be consulted: Browning: Poems (especially "Bishop Blougram's Apology)." Feuchtersleben: Zur Diätetik der Seele, Leipzig. Gœthe: Wilhelm Meister, Book VI. Hippocrates: Des Maladies des jeunes filles, (œuvres complètes) traduction Littré t. VIII. Krafft-Ebing: Über Gesunde und Kranke Nerven, Tübingen, 1885: Über Nervosität, Graz, 1884. Mantegazza: Anthropologisch-kultur historische Studien der Geschlechtsverhaltuisse des Menschen, Jena, 1886. Extasen des Menschen, Jena, 1888. Perier: Hygiène de L'Adolescence, Paris, 1891. Plutarch: Training of Children. Edouard Rod: La jeunesse de Gœthe, Bibliothéque Univ., Aug. 1889. Dr. Rousseau: De la folie à l'époque de la puberté, thèse, Paris, 1857. Schneider: Die Neuralgien in der Zeit der Pubertäts-Entwickelung, Leipzig, 1842. Vaughn: Hours with the Mystics. Verrier: L'hygiène de l'adolescence, Paris, 1887.

THE MORAL AND RELIGIOUS TRAINING OF CHILDREN AND ADOLESCENTS.

By G. Stanley Hall.

In a republic like ours patriotism is not so much admiration of our past history or confidence in present institutions, as it is belief that human nature is at bottom good, and trust in the beneficent and regulative powers of knowledge. When we speak of loving knowledge for its own sake we commonly mean for the sake of its effect on our characters as distinguished from all material advantages which may result from it. Strictly speaking, love of knowledge for its own sake is a psychological impossibility. It cannot exist without affecting conduct and character, and its value is measured by the way and the degree in which it does so. That knowledge can have any intrinsic value in and of itself alone is, indeed, the superstition of rationalism and *eclaircissement*, and is no less misleading than is the merely commercial view of it. Like light, knowledge, it is well said, is good to see by rather than to see. Without exerting or ripening into ethical potency, knowledge is not power but weakness, and is nearly as likely to arm the bad as the good elements of the soul and of society. The great educators have but little respect for the Platonic scruple whether virtue can be taught, and pedagogy (which even Hegel defined as pre-eminently the art of making men moral), includes moral discipline in addition to mere didactics. They assume that life without knowledge is better than knowledge which does not affect life, and that all which frees the mind is disastrous if it does not at the same time give self-control and make us better. In a republic, in a peculiar sense, moral, at the very least, as much as intellectual training is an obligation. Nowhere are children emancipated from the control of parents at so early an age, nowhere is individual liberty respected, or self-control and spontaneity addressed so precociously as in our country. The American child, too, comes into incessant contact with children of all social grades and nationalities, and is more liable to the contagion of vice. Private character is subjected to unusual strains in many ways, including all those peculiar to a period of transition in matters of faith, and the administration of justice, in which republics so easily and fatally fail, is in some portions of our land imperfect. Here moral training has in the past been left mainly to the church, the strong line of partition between which and the state is perhaps the most original and cherished solution of the religious question in history. Although the separation between school and church can never be absolute, because the human soul cannot be cleft in two, the method has such practical advantages, and is so congenial an expression of the instinct of religious toleration, that it is quite commonly assumed that the state has no right whatever to inquire into the efficiency of the ethico-religious methods of training adopted by the church, still less to interfere with them, whatever their character or however great the public need. If all the volumes now in existence which are expressly devoted to moral and religious training were piled together, a structure as large as the tower of Babel might be reared of them alone, and if they could all speak, a confusion of tongues surpassing the "Babel-babble" would be heard. The deeper and broader the religious life, or consciousness, experience, insight, the larger does the common element become. Indeed, the existence and need of common elements which no one can doubt, which must be held by all, always and everywhere, which men must believe as men, has been postulated often enough by Protestant thinkers, and underlies the very idea of Catholicity and, in fine, of religion itself. The very idea of Bible is consensus. It assumes the same needs, instincts, possibilities, talents, and predispositions in all for receiving the deliverances of the highest of all muses, the Holy Spirit. So far as its psycho-pedagogic character is concerned, and rigorously *excluding every other aspect of it*, religion is most fundamentally described as the popular culture of the highest ideal as opposed to material utility, which dominates so many of our intellectual interests, by reconformity of life to it. It may be formulated as unity with nature, as the readjustment of conduct to conscience, as restored harmony with self, reunion with God, or newly awakened love for Jesus, fresh insight into his mind or as new impulse to do his will. The common element is obvious. There has been a loss of the primitive relation or attitude to the highest or ideal norm, and man struggles back, not without pain and great effort, to restore the lost relationship. In a word, there must be atonement with implication of previous estrangement. When this process is conceived as intellectual, faith or intuition are said to close in with certain doctrines considered as normative and central; as emotional the heart is reconciled and loves a divine person, and as volitional

God's will is done. How man came to deviate from the ideal; the cause and extent of the alienation; how the ideal is to be conceived, whether subjectively as conscience or a higher instinct always pointing toward the undiscovered pole of human destiny, or objectively as an offended deity who must be placated by religious observances, or as the incarnate *logos*; how the reconciliation takes place, whether the divine ideal inclines to us or we to it first, most, or on what occasion and motive, and in the face of what difficulties and with what kind of mediation, if any; and even whether the whole process be literally real and actual, and accomplished in one time and place for all times and places, or an expression for the whole course of individual life and human history, immanent or transcendent; or, finally, as a sort of formulation which some universal sentiment, like, e. g., that of absolute dependence, gives itself naturally in all ripely developed lives, or indeed all these at once, as well as the results here and hereafter,—these questions, important as they have become, must be subordinated here and from this special point of view, as different explanations of the one great law under which morality itself as well as religion is included. The difference between the lowest, most undeveloped, or natural religion and its highest revealed form is so vast, and so justly emphasized by the church because it is so essentially pedagogic and practical, or because it makes what the individual is too limited to more than vaguely anticipate, so articulate, apprehensible, and available as a stimulus and guide to right conduct. It is not mere subjectivism, as Palmer charges in his "Evangelisched Pädagogik," to say that there must be a natural instinct in man coinciding more or less exactly with all that revelation gives, because but for this the latter would be unapprehensible and worthless. Indeed, it is because this fundamental native instinct, often described as longing, craving, homesickness for the good and true, is undeveloped, that religion is so often conceived as the irruption of a foreign principle, a graft from a new stock. It is said to be a psychological impossibility to teach anything as purely authoritative. If religion can be taught or revealed, it must already be performed in us by nature, though it may be but dimly. The teacher, then, must ever regard and inculcate religion as in a sense a growth or development, and in such a way that this natural predisposition be neither neglected, repressed, nor distorted. The pupil should, and in fact naturally does, in a trite sense, repeat the course of the development of the race, and education is simply the expediting shortening and normalizing of this course.

This latter is mainly accomplished in religious training by avoiding the countless and tedious deviations, superstitions, and errors which make up so large a part of the history of religion. In a word, religion is the most generic kind of culture as opposed to all systems or departments which are one-sided. All education culminates in it because it is the chief among human interests, and because it gives inner unity to the mind, heart, and will. How now should this common element of union be taught?

I. To be really effective and lasting, moral and religious training must begin in the cradle. It was a profound remark of Fröbel, that *the unconsciousness of a child is rest in God.* This need not be understood in any pantheistic sense. From this rest in God the childish soul should not be abruptly or prematurely aroused. Even the primeval stages of psychic growth are rarely so all-sided, so purely unsolicited, spontaneous, and unprecocious, as not to be in a sense a fall from Fröbel's unconsciousness or rest in God. The sense of touch, the mother of all the other senses, is the only one which the child brings into the world already experienced; but by the pats, caresses, hugs, etc., so instinctive with young mothers, varied feelings and sentiments are communicated to the child long before it recognizes its own body as distinct from things about it. The mother's face and voice are the first conscious objects as the infant soul unfolds, and she soon comes to stand in the very place of God to her child. All the religion of which the child is capable during this by no means brief stage of its development consists of those sentiments—gratitude, trust, dependence, love, etc.—now felt only for her, which are later directed toward God. The less these are now cultivated toward the mother, who is now their only fitting if not their only possible object, the more feebly they will later be felt toward God. This, too, adds greatly to the sacredness and the responsibilities of motherhood. Fröbel perhaps is right that thus fundamental religious sentiments can be cultivated in the earliest months of infancy. It is of course impossible not to seem, perhaps even not to be, sentimental upon this theme, for the infant soul has no other content than sentiments, and because upon these rests the whole superstructure of religion in child or adult. The mother's emotions, and physical and mental states, indeed, are imparted and reproduced in the infant so immediately, unconsciously, and through so many avenues, that it is no wonder that these relations seem mystic. Whether the mother is habitually under the influence of calm and tranquil emotions, or her temper is fluctuating or violent, or her movements are habitually energetic or soft and caressing, or she be regular or irregular in her ministrations to the infant in her arms, all these characteristics and habits are registered in the primeval language of touch upon the nervous system of the child. From this point of view poise and calmness, the absence of all intense stimuli and of sensations or transitions which are abrupt or sudden, and an atmosphere of quieting influences, like everything which retards by broadening, is in the general line of religious culture. The soul of an infant is well compared to a seed planted in a garden. It is not pressed or moved by the breezes which rustle the leaves overhead. The sunlight does not fall upon it, and even dew and evening coolness scarcely reach it; but yet there is not a breath of air, nor a ray of sunshine, nor a drop of moisture to which it is unresponsive, and which does not stir all its germinant forces. The child is a plant, must live out of doors in proper season, and there must be no forcing. Religion, then, at this important stage, at least, is naturalism pure and simple, and religious training is the supreme art of standing out of nature's way. So implicit is the unity of soul and body at this formative age that care of the body is the most effective ethico-religious culture.

As the child comes to know and feel its own ego, it must be taught obedience. As soon as it distinguishes between what it does for itself and what others do for it, it can command or obey, and must carefully be thrown upon its own resources so far as developed but no further. The whims and moods of the embryonic personality must be studied. To escape these children sometimes develop almost a passion for obedience. If, as children grow few and rare the tender but important cradle-battles go against the mother, the latter is enslaved and the former spoiled. Pleasures must be few and mild, and uniform, and rare and intense enjoyments that bring reaction avoided, and the mother must not lose her influence over the child before adolescence, when the maternal influences and home-ties should be at their strongest and best. The limitations of the almost infinite natural selfishness of the young child should be enforced along with submission to authority.

Next to be considered are the sentiments which unfold under the influence of that fresh and naïve curiosity which attends the first impressions of natural objects from which both religion and science spring as from one common root. The awe and sublimity of a thunder-storm, the sights and sounds of a spring morning, objects which lead the child's thoughts to what is remote in time and space, old trees, ruins, the rocks, and, above all, the heavenly bodies,—the utilization of these lessons is the most important task of the religious teacher during the *kindergarten* stage of childhood. Still more than the undevout astronomer, the undevout child under such influences is abnormal. In these directions the mind of the child is as open and plastic as that of the ancient prophet to the promptings of the inspiring Spirit. The child can recognize no essential difference between nature and the supernatural, and the products of mythopœic fancy which have been spun about natural objects, and which have lain so long and so warm about the hearts of generations and races of men, are now the best of all nutriments for the soul. To teach scientific rudiments only about nature, on the shallow principle that nothing should be taught which must be unlearned, or to encourage the child to assume the critical attitude of mind, is dwarfing the heart and prematurely forcing the head. It has been said that country life is religion for children at this stage. However this may be, it is clear that natural religion is rooted in such experiences, and precedes revealed religion in the order of growth and education, whatever its logical order in systems of thought may be. A little later habits of truthfulness are best cultivated by the use ~~of~~ of the senses in exact observation. To see a simple phenomenon in nature and report it fully and correctly is no easy matter, but the habit of trying to do so teaches what truthfulness is, and leaves the impress of truth upon the whole life and character. I do not hesitate to say, therefore, that elements of science should be taught to children for the moral effects of its influences. At the same time all truth is not sensuous, and this training alone at this age tends to make the mind pragmatic, dry, and insensitive or unresponsive to that other kind of truth the value of which is not measured by its certainty so much as by its effect upon us. Renan has remarked in substance that all higher truth consists in *nuances*, which play over that realm of conscience and the humanities where open questions will always excite hope and fear. We must learn to interpret the heart and our native instincts as truthfully as we do external nature, for our happiness in life depends quite as largely upon bringing our beliefs into harmony with the deeper feelings of our nature as it does upon the ability to adapt ourselves to our physical environment. Thus not only all religious beliefs and moral acts will strengthen if they truly express the character instead of cultivating affectation and insincerity in opinion, word, and deed, as with mistaken pedagogic methods they may do. This latter can be avoided only by leaving all to naturalism and spontaneity at first, and feeding the soul only according to its appetites and stage of growth. No religious truth must be taught as fundamental—especially as fundamental to morality—which can be seriously doubted or even misunderstood. Yet it must be expected that convictions will be transformed and worked over and over again, and only late, if at all, will an equilibrium between the heart and the truth it clings to as finally satisfying be attained. Hence most positive religious instruction, or public piety if at all should be taught briefly as most serious but too high for the child yet, or as rewards to stimulate curiosity for them later, but sacred things should not become too familiar or be conventionalized before they can be felt or understood.

So long as the child's parents supply the place of Providence to it, and before its wishes and desires expand beyond the domestic circle, it is only a pretty affectation to cultivate a sense of very *great* intimacy with the Heavenly Father. To feel its inmost thought watched by a divine eye will only tend to foster self-consciousness, or a morbid and precocious conscientiousness, or at best the forms of conventional morality, while its conceptions of God's nature will be inadequate even to the verge of idolatry, and perhaps forever dwarfed by childish associations. The child's real communion with God is in fact far too immediate and inward to be more than faintly typified by any forms of conscious worship which it can share. It is the being of a precociously and wrongly apprehended God which soon comes to need proofs of his existence; and even Lotze says, men were mistaken when they thought they had done well in raising God from that region where he is clung to by the whole soul with all its spontaneous energy, and conferring on him the honor of exactly demonstrating his existence. If a child's mental growth repeats the experience of the race, the idea of God is not flashed in upon the infant mind complete and vivid at first by any native intuitions. It can be realized in a natural way only after the necessity of a cause is felt to be general, or when the demand for a unity and centre of things in the wide and varied world arises. The child's conception of God should not be personal or too familiar *at first*, but he should appear distant and vague, inspiring awe and reverence far more than love; in a word, as the God of nature rather than as devoted to serviceable ministrations to the child's individual wants. The latter should be taught to be a faithful servant rather than a favorite of God. The inestimable pedagogic value of the God-idea consists in that it widens the child's glimpse of the whole, and gives the first presentiment of the universality of laws, such as are observed in its experiences and that of others, so that all things seem comprehended under one stable system or government. The slow realization that God's laws are not like those of parents and teachers, evadible, suspensible, and their infraction perhaps pardoned, but changeless, pitiless, and their penalties sure as the laws of nature, is a most important factor of moral training, more Jewish perhaps than Christian, but a factor too noble to be obscured or suppressed, or prematurely superseded as it often practically is by the notion of God as a fond and too indulgent Heavenly Parent, like the father or mother swayed by foolish childish petitions and always ready and longing to forgive. First the law, the schoolmaster, then the Gospel; first nature, then grace, is the order of growth.

The pains or pleasures which follow many acts are immediate, while the results that follow others are so remote or so serious that the child must utilize the experience of others. Artificial rewards and punishments must be cunningly devised so as to simulate and typify as closely as possible the real natural penalty, and they must be administered uniformly and impartially like laws of nature. As commands are just, and as they are gradually perceived to spring from superior wisdom, respect arises, which Kant called the bottom motive of duty, and defined as the immediate determination of the will by law, thwarting self-love. Here the child reverences what is not understood as authority, and to the childish "why?" which always implies imperfect respect for the authority, however displeasing its behest, the teacher or parent should always reply, "You cannot understand why yet," unless quite sure that a convincing and controlling insight can be given, such as shall make all future exercise of outward authority in this particular unnecessary. From this standpoint the great importance of the character and native dignity of the teacher is best seen. Daily contact with some teachers is itself all-sided ethical education for the child without a spoken precept. Here, too, the real advantage of male over female teachers, especially for boys, is seen in their superior physical strength, which often, if highly estimated, gives real dignity and commands real respect, and especially in the unquestionably greater uniformity of their moods and their discipline.

During the first years of school life a point of prime importance in ethico-religious training is the education of conscience. This latter is the most complex and perhaps the most educable of all our so-called "faculties." A system of carefully arranged talks, with copious illustrations from history and literature, about such topics as fair play, slang, cronies, dress, teasing, getting mad, prompting in class, white lies, affectation, cleanliness, order, honor, taste, self-respect, treatment of animals, reading, vacation pursuits, etc., can be brought quite within the range of boy-and-girl interests by a sympathetic and tactful teacher, and be made immediately and obviously practical. All this is nothing more or less than conscience-building. The old superstition that children have innate faculties of such a finished sort that they flash up and grasp the principle of things by a rapid sort of first "intellection," an error that made all departments of education so trivial, assumptive and dogmatic for centuries before Comenius, Basedow and Pestalozzi, has been banished everywhere save from moral and religious training, where it still persists in full force. The senses develop first, and all the higher intuitions called by the collective name of conscience gradually and later in life. They first take the form of sentiments without much insight, and are hence liable to be unconscious affectation, and are caught insensibly from the environment with the aid of inherited predisposition, and only made more definite by such talks as the above. But parents are prone to forget that healthful and correct sentiments concerning matters of conduct are at first very feeble, and that the sense of obligation needs the long and careful guardianship of external authority. Just as a young medical student with a rudimentary notion of physiology and hygiene is sometimes disposed to undertake a more or less complete reform of his diet, regimen, etc., to make it "scientific" in a way that an older and a more learned physician would shrink from, so the half-insights of boys into matters of moral regimen are far too apt, in the American temperament, to expend, in precocious emancipation and crude attempts at practical realization, the force which is needed to bring their insights to maturity. Authority should be relaxed gradually, explicitly, and provisionally over one definite department of conduct at a time. To distinguish right and wrong in their own nature is the highest and most complex of intellectual processes. Most men and all children are guided only by associations of greater or less subtlety. Perhaps the whole round of human duties might be best taught by gathering illustrations of selfishness and tracing it in its countless disguises and ramifications through every stage of life. Selfishness is opposed to a sense of the infinite and is inversely as real religion, and the study of it is not, like systematic ethics, apt to be confused and made unpractical by conflicting theories.

The Bible, the great instrument in the education of conscience, is far less juvenile than it is now the fashion to suppose. At the very least it expresses the result of the ripest human experience, the noblest traditions of humanity. Old Testament history, even more than most very ancient history, is distilled to an almost purely ethical content. For centuries Scripture was withheld from the masses for the same reason that Plato refused at first to put his thoughts into writing, because it would be sure to be misunderstood by very many and lead to that worst of errors and fanaticism caused by half-truths. Children should not approach it too lightly.

The Old Testament, perhaps before or more than the New, is the Bible for childhood. A good, protracted course of the law pedagogically prepares the way for the apprehension of the Gospel. Even for the Old Testament, a propædeutic selection of the choicest moral tales from Catholic legends, classic and Hindoo mythology, ancient myths and fables, German märchen, and perhaps from the Bibles of other religions, etc., might perhaps serve as a sort of introduction. What a Sunday-school library might be gradually developed from such sources! Then the study of the Old Testament should begin with selected tales, told, as in the German schools, impressively, in the teacher's language, but objectively, and without exegetical or hortatory comment. The appeal is directly to the understanding only at first, but the moral lesson is brought clearly and surely within the child's reach, but not personally applied after the manner common with us.

II. Probably the most important changes for the educator to study are those which begin between the ages of twelve and sixteen and are completed only some years later, when the young adolescent receives from nature a new capital of energy and altruistic feeling. It is a physiological second birth, and success in life depends upon the care and wisdom with which this new and final invoice of energy is husbanded. These changes constitute a natural predisposition to a change of heart, and may perhaps be called, in Kantian phrase, its *schema*. Even from the psychophysic stand-point it is a correct instinct which has slowly led churches to centre so much of their cultus upon regeneration. In this I of course only assert here the neurophysical side, which is everywhere present, even if everywhere subordinate to the spiritual side. As everywhere, so here too, the physical may be called in a sense regulative rather than constitutive. It is therefore not surprising that statistics show—so far as I have yet been able to collect them—that far more conversions, *pro rata*, take place during the adolescent period, which does not normally end before the age of twenty-four or five, than during any other period of equal length.

Before this age the child lives in the present, is normally selfish, deficient in sympathy, but frank and confidential, obedient upon authority, and without affectation save the supreme affectation of childhood, viz., assuming the words, manners, habits, etc., of those older than itself. But now stature suddenly increases, and the power of physical and mental endurance and effort diminishes for a time; larynx, nose, chin change, and normal and morbid ancestral traits and features appear. Far greater, more protracted, though unseen, are the changes which take place in the nervous system, both in the development of the cortex and expansion of the convolutions and the growth of association-fibres by which the elements shoot together and relation of things are seen, which hitherto seemed independent, to which it seems as if for a few years the energies of growth were chiefly directed. Hence this period is so critical and changes in character so rapid. No matter how confidential the relations with the parent may have been, an important domain of the soul now declares its independence. Confidences are shared with those of equal age and withheld from parents, especially by boys, to an extent probably little suspected by most parents. Education must be addressed to freedom, which recognizes only self-made law, and spontaneity of opinion and conduct is manifested, often in extravagant and grotesque forms. There is now a longing for that kind of close sympathy and friendship which makes cronies and intimates; there is a craving for strong emotions which gives pleasure in exaggerations; and there are nameless longings for what is far, remote, strange, which emphasizes the self-estrangement which Hegel so well describes, and which marks the normal rise of the presentiment of something higher than self. Instincts of rivalry and competition now grow strong in boys, and girls grow more conscientious and inward, and begin to feel their music, reading, religion, painting, etc., and to realize the bearing of these upon their future adult life. There is often a strong instinct of devotion and self-sacrifice toward some, perhaps almost any, object or in almost any cause which circumstances may present. Moodiness and perhaps a love of solitude are developed. "Growing fits" make hard and severe labor of body and mind impossible without dwarfing or arresting the development, by robbing the nutrition, of some part of its organism, stomach, lungs, chest, heart, back, brain, etc., which is peculiarly liable to disease later. It is never so hard to tell the truth plainly and objectively and without any subjective twist. The life of the mere individual ceases and that of person, or better of the race, begins. It is a period of realization, and hence often of introspection. In healthy natures it is the golden age of life, in which enthusiasm, sympathy, generosity, and curiosity are at their strongest and best, and when growth is so rapid that e. g., each college class is conscious of a vast interval of development which separates it from the class below; but it is also a period subject to Wertherian crises, such as Hume, Richter, J. S. Mill, and others passed through, and all depends on the direction given to these new forces.

The dangers of this period are great and manifest. The chief of these, far greater even than the dangers of intemperance, is that the sexual elements of soul and body will be developed prematurely and disproportionately. Indeed early maturity in this respect is itself bad. If it occurs before other compensating and controlling powers are unfolded, this element is hypertrophied and absorbs and dwarfs their energy and it is then more likely to be uninstructed and to suck up all that is vile in the environment. Probably the greatest and most experienced living teacher of physiology has expressed the opinion that at least nine tenths of the thoughts, feelings, imaginations of the *average* male adolescent centre for a few early years of this period about this factor of his nature. Quite apart, therefore, from its intrinsic value, education should serve the purpose of preoccupation, and should divert attention from an element of our nature the premature or excessive development of which dwarfs every part of soul and body. Intellectual interests, athleticism, social and æsthetic tastes, should be cultivated. There should be some change in external life. Previous routine and drill-work must be broken through and new occupations resorted to, that the mind may not be left idle while the hands are mechanically employed. Attractive home-life, friendships well chosen and on a high plane, and regular habits, should of course be cultivated. Now, too, though the intellect is not frequently judged insane, so that pubescent insanity is comparatively rare, the feelings, which are yet more fundamental to mental sanity, are most often perverted, and lack of emotional steadiness, violent and dangerous impulses, unreasonable conduct, lack of enthusiasm and sympathy, are very commonly caused by abnormities here. Neurotic disturbances, such as hysteria, chorea, and, in the opinion of some physicians, sick-headache, are peculiarly liable to appear and become seated during this period. In short, the previous selfhood is broken up like the regulation copy handwriting of early school years, and a new individual is in process of crystallization. All is solvent, plastic, peculiarly susceptible to external influences.

Between love and religion God and nature have wrought a strong and indissoluble bond. Flagellations, fasts, exposure, excessive penances of many kinds, the Hindoo cultus of quietuede, and mental absorption in vacuity and even one pedagogic motive of a cultus of the spiritual and supernatural, *e. g.* in the symposium of Plato, are all designed as palliatives and alteratives of degraded love. Change of heart before pubescent years, there are several scientific reasons for thinking is as some now say the most disastrous of all precocities and forcings. The age signalized by the ancient Greeks as that at which the study of what was comprehensively called music should begin, the age at which Roman guardianship ended, as explained by Sir Henry Maine, at which boys are confirmed in the modern Greek, Catholic, Lutheran and Episcopal churches, and at which the child Jesus entered the temple, is as early as any child ought consciously to go about his heavenly Father's business. "It did not seem to me modest for my daughter to hear," said a cultivated and devout German mother, explaining why she had sent her twelve-year-old daughter from the room while I was describing revival scenes I had witnessed in this country. If children are instructed in the language of the these sentiments too early, the all-sided deepening and broadening of soul and of conscience which should come with adolescent years will be incomplete. Revival sermons the writer has heard to young children are analogous to exhorting them to imagine themselves married people and inculcating the duties of that relation. It is because this precept is violated in the intemperate haste for immediate results that we may so often hear childish sentiments and puerile expressions so strangely mingled in the religious experience of otherwise apparently mature adults, which remind one of a male voice constantly modulating from manly tones into boyish falsetto. Some one has said of very early risers that they were apt to be conceited all the forenoon, and stupid and uninteresting all the afternoon and evening. So, too, precocious infant Christians are apt to be conceited and full of pious affectations all the forenoon of life, and thereafter commonplace enough in their religious life. One is reminded of Aristotle's theory of Katharsis, according to which the soul was purged of strong or bad passions by listening to vivid representations of them on the stage. So, by the forcing method we deprecate, the soul is given just enough religious stimulus to act as an inoculation against deeper and more serious interest later. At this age the prescription of a series of strong feelings is very apt to cause attention to concentrate on physical states in a way which may culminate in the increased activity of the passional nature, or may induce that sort of self-flirtation which is expressed in morbid love of autobiographic confessional outpourings, or may issue in the supreme selfishness of incipient and often unsuspected hysteria. Those who are led to Christ normally by obeying conscience are not apt to endanger the foundation of their moral character if they should later chance to doubt the doctrine of verbal inspiration or some of the miracles, or even get confused about the Trinity, because their religious nature is not built on the sand. The art of leading young men through college without ennobling or enlarging any of the religious notions of childhood is anti-pedagogic and unworthy philosophy, and is to leave men puerile in the highest department of their nature.

At the age we have indicated, when the young man instinctively takes the control of himself into his own hands, previous ethico-religious training should be brought to a focus and given a personal application, which, to be most effective, should probably in most cases be according to the creed of the parent. It is a serious and solemn epoch, and ought to be fittingly signalized. Morality now needs religion, which cannot have affected life much before. Now duties should be recognized as divine commands, for the strongest motives, natural and supernatural, are needed for the regulation of the new impulses, passions, desires, half-insights, ambitions, etc., which come to the American temperament so suddenly before the methods of self-regulation can become established and operative. Now a deep personal sense of purity and impurity are first possible, and indeed inevitable, and this natural moral tension is a great opportunity to the religious teacher. A serious sense of God within, and of responsibilities which transcend this life as they do the adolescent's power of comprehension; a feeling for duties deepened by a realization and experience of their conflict such as some have thought to be the origin of religion itself in the soul,—these, too, are elements of the "theology of the heart" revealed at this age to every serious youth, but to the judicious emphasis and utilization of which the teacher should lend his consummate skill. While special lines of interest leading to a career must be now well grounded, there must also be a culture of the ideal and an absorption in general views and remote and universal ends. If all that is pure and disciplining in what is transcendent, whether to the Christian believers, the poet or the philosopher, had even been devised only for the better regulation of human energies set free at this age, but not yet fully defined or realized, they would still have a most potent justification on this ground alone. At any rate, what is often wasted in excess here if husbanded ripens into philosophy, the larger love to the world, the true and the good, in a sense not unlike that in the symposium of Plato.

Finally, there is danger lest this change, as prescribed and formulated by the church, be too sudden and violent, and the capital of moral force which should last a lifetime be consumed in a brief, convulsive effort, like the sudden running down of a watch if its spring be broken. Piety is naturally the slowest because the most comprehensive kind of growth. Quetelet says that the measure of the state of civilization in a nation is the way in which it achieves its revolutions. As it becomes truly civilized, revolutions cease to be sudden and violent, and become gradually transitory and without abrupt change. The same is true of that individual crisis which psycho-physiology describes as adolescence, and of which theology formulates a higher spiritual potency as conversion. The adolescent period lasts ten years or more, during all of which development of every sort is very rapid and constant, and it is, as already remarked, intemperate haste for immediate results, of reaping without sowing, which has made so many regard change of heart as an instantaneous conquest rather than as a growth, and persistently to forget that there is something of importance before and after it in healthful religious experience.

Peda. Seminary
V. 1, May (?), 1891, pp. 211-18

CHILDREN'S LIES.

BY G. STANLEY HALL.

Four tactful lady teachers from Mrs. Pauline A. Shaw's kindergartens in Boston examined 300 children of both sexes between 12 and 14 privately, by a carefully devised method which avoided all indelicacy to the childish conscience. The returns are divided into seven distinct species of lies, each is reported on with detail. I. *Pseudophobia*, where every deviation from painfully literal truth is alike heinous, where, "I think" or "perhaps" is silently interpolated, or "not" is said over hundreds of times to neutralize the guilt of intended and unintended falsehoods. Some even feared instant death like Ananias for even an unconscious misstatement, systematized palliatives, casuistic word-splitting, was the result. II. The *lie heroic*, which is justified as a means to noble ends. Here belongs false confessions where strong children assume penalties of weaker ones. Children have a wholesome instinct for viewing moral situations as wholes, but yet are not insensitive to that eager and sometimes tragic interest which has always for all men invested those situations in both life and in literature where duties seem to conflict. The normal child feels the heroism of the unaccountable instinct of self-sacrifice far earlier and more keenly than it can appreciate the sublimity of truth. Theoretic or imagined cases of this kind were often volunteered by the children with many variations. They declare, *e. g.*, that they would say that their mother was out when she was in, if it would save her life, giving quite a scenic setting to such a possible occurrence, adding infrequently that this would not make it *exactly* right, though it would be their duty to do it, or that they would not tell a like lie to save their own lives. A doctor, too, many suggested, might tell an over-anxious patient or dearest friend that there was hope, easing his conscience, perhaps, by reflecting that they had some though he had none. In confronting such cases, it is the conscientious parent or teacher who is most liable to get nervous and err. It is feared, that although the end is very noble and the fib or quibble very petty at first, worse lies for meaner objects may follow. The fondness and even sense of exhilaration, with which children often describe such situations, is often due to a feeling of easement from a rather tedious sense of the obligation of undiscriminating, universal and rigorously literal veracity, under which also very often lurks an effort to find the flavor of exculpation for more inexcusable lies. The child who gets really interested in what it deems the conflict of veracity with other duties, may be reverently referred to the inner light of its own conscience. This seems to be a special opportunity of nature for teaching the need of keeping a private protestant tribunal where personal moral convictions preside, and which alone enables men to adapt themselves to new ethical situations. III. *Truth for friends and lies for enemies.* With most children, as with savages, truthfulness is greatly affected by personal likes and dislikes. In many cases they could hardly be brought to see wrong in lies a parent or some kind friend had wished them to tell. Often suspected lies were long persisted in till they were asked if they would have said that to their mothers, when they at once weakened. Boys keep up joint or complotted lies which girls rarely do, who "tell on" others because they are "sure to be found out," or "some one else will tell," while boys can be more readily brought to confess small thefts, and are surer to own up if caught, than girls. All children find it harder to cheat in their lessons with a teacher they like. Friendships are cemented by frank confidences and secrets and promises not to tell. To simulate or dissimulate to the priest, or above all, to God, was repeatedly referred to as worst of all. On the other hand, with waning attachment, promises not to tell weaken in their validity. It has taken mankind long enough to learn the sublimity of a kind of truthfulness which is no respecter of persons. The best correction of this general tendency of children, we believe to be instruction in science, the moral needs and uses of which alone call loudly for more of it and better. But the teachers of younger children should look well to their friendships, and study especially, the character of leaders and favorites. IV. *Selfishness.* Every game, especially, every exciting one, has its own temptation to cheat; and long records of miscounts in tallies, moving balls in croquet, crying out "no play" or "no fair" at critical moments to divert impending defeat, false claims made to umpires, and scores of others show how unscrupulous the all-constraining passion to excel often renders even young children. Lies of this kind, prompted by excitement, are so easily forgotten when the excitement is over that they rarely rankle, and are hard to get at, but they make boys unscrupulous and grasping. School life is responsible for very many, if not most of the deliberate lies of this class. Few will not give, and not many will not take prompts or peep in their books, especially if in danger of being dropped or failing of promotion. There was a long list of headaches, nosebleeds, stomach-aches, etc., feigned to get out of school or avoid going to it, of false excuses for absence and tardiness, the teacher, especially if disliked, being so often exceptionally fair game for all the arts of deception; all this seems generally prevalent. This class of lies ease children over so many hard places in life and are convenient covers for weakness and even vice. The facility with which a whole street or school may be corrupted in this respect, often without suspicion on the part of adults, by a single bold, bad, but popular child, the immunity from detection which school offers so much more than home for even habitual lies of this class, as well as the degree of moral degradation to which they may lead, all point to selfish falsehoods — especially when their prevalence is taken into account — as on the whole the most dangerous, corrupting, and hard to correct of any of our species. Excessive emulations, penalties, opportunities, and temptations should of course be reduced, but it should be clearly seen that all these lies are at bottom, forms of self-indulgence, and should, in the great majority of cases, be treated as such, rather than dealt with directly as lies. The bad habits they cover should be patiently sought out and corrected, for those who habitually do ill are sure to learn to lie to conceal it. The sense of meanness this slowly breeds must be met by appeals to honor, self-respect, self-control. Hard and even hated tasks, and rugged moral, mental and physical regimen should supplement those modern methods which make education a sort of self-indulgence of natural interests. V. *Imagination and Play.* Much childish play owes its charm to partial self-deception. Children imagine or make believe they are animals, soldiers, hunters in extreme peril from wild beasts, Indians, artisans, and tradesmen of many kinds, doctors, preachers, angels, ogres. They play school, court, meeting, congress. If hit with wooden daggers in the game of war they stand aside and play they are dead. If they step on a crack in walking the floor or sidewalk, they call it they are poisoned. Protruding spots of earth or land in pools or ponds, or at half-tide in the bay, suggest the geography of a continent, and in one case, for years, Boston, Providence, West Indies, Gilbraltar, Brooklyn Bridge were thus designated by all the children of a large school in their plays. In another, a dozen hills, valleys, rills, near by were named from fancied resemblance to the familiar mountains, rivers and valleys of the geography. The play-house sometimes is so real as to have spools for barrels of flour, pounded rotten wood for sugar, pumpkin chairs, cucumber cows, moss carpets, sticks for doors which must be kept shut, twig brooms, pet animals for stock with pastures and yards, all the domestic industries in pantomime, toad-stools, lichens and puff-balls for bric-a-brac, while some older boy and girl may play parents with secret pet names, and younger ones as children, often for a whole term and in rare instances for years; all of this of course being almost always in the country. They baptize cats, bury dolls, have puppet shows with so many pins admission, all with elaborate details. They dress up and mimic other often older people, ride on the horse cars and imagine them fine carriages, get up doll hospitals and play surgeon or Florence Nightingale. The more severe the discipline of the play-teacher and the more savage the play-mother the better the fun. One phase of this is exquisitely illustrated in the life of Hartley Coleridge, by his brother. His many conceptions of his own ego—e. g., by the picture Hartley, shadow Hartley, echo Hartley, etc.; his fancy that a cataract of what he named jug-force would burst out in a certain field, and flow between populous banks where an ideal government, long wars and even a reformed spelling illustrated in a journal devoted to the affairs of this realm, were all developed in his imagination where they existed with great reality for years; his stories to his mother continued for weeks; his reproduction of all he had seen in London, its theater, laboratory, and what he had read of wars, geographical divisions, in a large play-ground appropriated to his use,—these all illustrate this normal tendency, but in a degree of intensity probably morbid, much resembling the pseudo-hallucinations of Kandinsky. Two sisters used to say, "let us play we are sisters," thus making the relation more real. Cagliostro found adolescent boys particularly apt for his training to subserve the exhibition of the phrenological impostures illustrating his thirty-five faculties. He lied when he confessed he had lied, said a young Sancho Panza who had believed the wild tales of another boy who later confessed their falsity. Sir James Mackintosh in youth after reading Roman History used to fancy himself the emperor of Constantinople, and carry on the administration of the realm, hours at a time and often resumed for months. These fancies of his never amounted to conviction, but doubtless excited a faint expectation, which, had they been realized, would have lessened his wonder. Charlotte Elizabeth lived largely in an imaginary realm for years in her youth. In some games like "crazy mother," younger children are commanded, or older ones stumped or dared, to do dangerous things, like walking a picket fence or a high roof, etc., in which the spirit of play overcomes great natural timidity, and by playing school with other mates, or perhaps parents, they are helped by the play instinct to do hard examples and other hated tasks they had scarcely accomplished in actual schools. The stimulus and charm of the imagination makes them act a part different from their natural selves; some games need darkness to help out the fancy. It seems almost the rule that imaginative children are more likely to be dull in school work, and that those who excel in it are more likely to have fewer or less vivid mental images of their own. One early manifestation of the shadowy falsity to fact of the idealizing temperament is often seen in children of three or four, who suddenly assert that they saw a pig with five ears, a dog as big as a horse, apples on a cherry tree, and other Munchausen wonders, which really means at first but little more than that they have that thought or have made that mental combination independently of experience. They come to love to tell semi-plausible stories, and perhaps when the astonishment is over to confess. Or, again, all stories of men and things they hear are given a setting in the natural scenery, or far less often, in the houses they know best, and their friends are cast in the rôles. The fancy of some children is almost visualization, and a few will tell at once, e. g., what was the color of Barbara Frietchie's dress, whether she wore glasses and a cap, just where in their father's sheep-pasture the goblin in the Arabian Nights rose out of the bottle, if pictures of these objects have not obviated the normal action of this faculty. Revery which materializes all wishes, and the mythopœic faculty which still occasionally creates a genuine myth among children, boys who amuse their mates with long and often clever yarns of their own invention, girls who make up ridiculous things about others—to all these the school has paid little attention, and Mr. Gradgrind would war upon them all as inimical to scientific veracity. We might almost say of children at least, somewhat as Froschamer argues of mental activity, and even of the universe itself, that all their life is imagination. Such exercise of their faculties children must have even in the most platonic school republic. Its control and not its elimination is what is to be sought in the high interest of truthfulness. The progressive degeneration of the school reader, and the simultaneous development of flash literature for the young, has had much to do with the growth of evil tendencies in this field. To direct and utilize, so far as it needs it, this manifestation of the play-instinct, which, though sporting with lies so gracious and innocent, may lead to so many kinds of divorce of thought from reality and of self-deception, the whole question of how best to introduce the young to the best literature of the world, each kind and grade in fit time and proportion, must, we believe, be pondered, and to this problem we shall turn elsewhere. How much of this can best be appreciated in children; only those know who have realized in their own experience and observation how youthful minds find and play about the chief beauties of ballads, of Homer properly told in English, and of the story books and great situations in the choicest English writers, if only put in proper form. Psychologically imaginative literature is a direct development from this variety of play, and into this its unfoldment is natural.

VI. *Pseudomania.* The worst type of lies which may be called pathological are rare among children and are illustrated by passionate love of showing off, and false pretences, assuming new characters or going to a new place. A few children, especially girls, are honey-combed with morbid self-consciousness and affectation, and seem to have no natural character of their own, but to be always acting a part and attracting attention. Boys prefer fooling, and humbugging by tricks or lies, sometimes of almost preternatural acuteness and cleverness. This is the normal diathesis which develops girls into hysterical invalids, deceiving sometimes themselves and sometimes their relatives most, on whom faith-curers work genuine miracles, and which makes boys into charlatans and impostors of many kinds. The recent literature of both telepathy and hypnotism furnish many striking examples of this type. Accessory motives, love of applause, money, etc., are at first involved, but later what we may designate as a veritable *pseudomania* supervenes where lies for others, and even self-deception are an appetite indulged directly against every motive of prudence and interest. As man cannot be false to others if true to self, so he cannot experience the dangerous exhilaration of deceiving others without being in a measure his own victim, left to believe his own lie. Those who have failed in many legitimate endeavors learn that they can make themselves of much account in the world by adroit lying. These cases demand the most prompt and drastic treatment. If the withdrawal of attention and sympathy, and belief in the earlier manifestations, and if instruction and stern reprimand are not enough, there is still virtue in the rod, which should not be spared, and, if this fail, then the doctor should be called.

Finally, children have many palliatives for lies that wound the conscience. If one says "really" or "truly," especially, if repeated, and most solemnly of all, "I wish to drop down dead this minute, if it is not so," the validity of any statement is greatly reduplicated. Only a child who is very hardened in falsehood, very fearful of consequences, or else truthful, will reiterate "it is so anyhow," even to tears in the face of evidence he cannot rebut, while others will confess or simulate a false confession as the easiest issue. Only young children who mistake for truth whatever pleases their elders, or, occasionally those too much commended for so doing, and find pleasure in confessing what they never did. To say yes, and add in whisper, "in my mind," meant no, among the children of several schools at least in one large city. To put the left hand on the right shoulder also has power, many think, to reverse a lie, and even an oath may be neutralized or taken in an opposite sense by raising the left instead of the right hand. To think "I do not mean it," or to mean it in a different sense, sometimes excruciatingly different from what is currently understood was a form of mental reservation repeatedly found. If one *tries* not to hear when called, he may say he did not hear, with less guilt. An acted lie is far less frequently felt than a spoken one, so to nod is less sinful than to say yes; to point the wrong way when asked where some one is gone, is less guilty than to *say* wrongly. Pantomimed lies are, in short, for the most part, easily gotten away with. It is very common for children to deny in the strongest and most solemn way wrongs they are accused of, and when, at length, evidence is overwhelming, to explain or to think, "My hand, or foot did it, not I." This distinction is not unnatural in children whose teachers or parents so often snap or whip the particular member which has committed the offence. In short, hardly any of the sinnosities lately asserted, whether rightly or wrongly, of the earlier Jesuit confessionals, and all the elaborated pharmacopœia of placebos they are said to have used to ease consciences outraged by falsehood, seem reproduced in the spontaneous endeavors of children to mitigate the poignancy of this sense of guilt.[1]

In fine, some forms of the habit of lying are so prevalent among young children that all illustrations of it, like the above seem trite and commonplace. Thorough-going truthfulness comes hard and *late*, and school life is now so full of temptation to falsehood that an honest child is its rarest, as well as its noblest work. The chief practical point is for the teacher to distinguish the different forms of the disease and apply the remedies best for each. So far from being a simple perversity, it is so exceedingly complex, and born of such diverse and even opposite tendencies, that a course of treatment that would cure one form, would sometimes directly aggravate another. If we pass from the shallowness of Mrs. Opie to the deeper, but often misconceived one of Heinroth, and strive to realize the sense in which all sin and all disease are lies, because perversions of the intent of Nature, we shall see how habitual fasehood may end, and in what in a broad sense it begins. A robust truth-speaking is the best pedagogic preparation for active life, which holds men up to the top of their moral condition above the false beliefs, false fears, and false shames, hopes, loves we are prone to. The effort to act a part or fill a place in life for which Nature has not made us, whether it be school-bred, or instinctively fascinating to intoxication as it is for feeble, characterless, psychophysic constitutions, is one of the chief sources of waste of moral energy in modern society. Lies, acted, spoken, imagined, give that morbid self-consciousness so titileting to neurotic constitutions. The habitual gratification of all a child's wishes indirectly cultivates mendacity, for truth requires a robust and hardy self-sacrifice, which luxury makes impossible. Much society of strangers where "first impressions" are consciously made, favors it. Frequent change of environment, or of school or residence, favors it, for a feeling that "new leaves" can be easily turned arises. Frequent novelties, even of studies, probably cultivate one of its most incurable forms, viz., that state of nerves where the first impression is strong and vivid and pleasurable, while repetitions are indifferent, if not soon positively painful; a condition which, but for multiplying the already large number of mild manias, might be called *neomania*. Children should be shielded from both the professional mendacity and the false exaggeration of the abnormal of many modern newspapers, and held to long and firm responsibility for their acts and words. When men or civilization, yet capable of it, give up the lie and fall back to their best and truest selves, to be and to be accepted for what they really are by nature and heredity, one of the highest and most intense of all pleasures is realized, which though narrowed and conventionalized by many religious and dogmatic systems, is very manifold and may appear as general moral reformation, new intellectual insights, emotional easement and satisfaction, greater energy in action, and perhaps even greater physical betterment in certain forms of disease in certain temperaments, and, in a word, is still, from the standpoint of scientific psychology, not unworthy the grand old but greatly abused term Regeneration.

---

[1] See I. P. Gury; casus conscientiae Ratisbon, 1865, and Ierving Tailor, Ductor Dubitantium.

THE OBSERVATION OF CHILDREN AT THE WORCESTER NORMAL SCHOOL.

By Wm. H. Burnham.

For several years the students of this school have studied psychology in a unique way. They supplement text-book work by direct observation of children. "The principal requests the students to observe the conduct of children in all circumstances,—at home, at school, in the street, at work, at play, in conversation with one another and with adults,—and record what they see and hear as soon as circumstances will permit. When the nature of the work is explained to the school, great emphasis is placed upon the necessity of having the records genuine beyond all possibility question; of having them consist of a simple, concise statement of what the child does or says, without comment by the writer; of making both the observation and the record without the knowledge of the child; and of noting the usual, rather than the unusual, conduct of the individuals observed. For convenience in classification, blanks of five colors are provided for the records. White paper is used for such observations as students make themselves; red for well-attested ones reported by others; yellow for reminiscences of their own childhood; green for mention of whatever they read on the subject; and chocolate for observations that extend continuously over a period of time." On each blank is recorded the date, observer's name, age, post-office address, and the name, sex, nationality, and age of the child observed, also the length of time between making the observation and recording it.[1]

Over 14,000 reports have now (May, 1891) been made. Among them are recorded many interesting and valuable psychological observations; but the most valuable result of the work has been the influence upon the observers. They have become genuinely interested in the varied activities of childhood. Even the "bad boy" often becomes an object of study. As a means of bringing the young teacher into relations of interest and sympathy with children this work can hardly be commended too highly.

The method seems to have special value also as a device for revivifying old truths that have become commonplace. The most frequent faults of young teachers result from ignoring pedagogic principles that are universally accepted, from neglecting maxims that have so long formed part of the common sense of the race that they have become platitudes. The aim in the training of teachers is to give them at least all the pedagogic wisdom of the past, and to make this knowledge effective, to turn knowing into doing. But it is a profoundly difficult thing to enforce the value of platitudes. To take a concrete example, what is more inexpressibly dull than generalities about the importance of the teacher's influence, and yet what is more fundamental to all true pedagogy than the maxim, *Do yourself what you would have your pupils do?* The instinct of imitation, according to Darwin, Preyer, and others, appears in the first year of life. It often seems to be an unconscious, blind impulse automatically to repeat any act perceived. Similar phenomena of imitation appear in adults. Perhaps we never perceive an act in another without having an incipient impulse to perform the same. In normal life we find ourselves unconsciously dropping into the customs, habits, tricks, gestures, and pronuncitation of our companions; and in some cases of hypnosis the subject automatically repeats every gesture made by the experimenter. This impulse is especially strong in children. It is this that makes their education possible; and I can conceive no better way to make teachers realize, that, if possible, they should themselves do what they would have their pupils do than to set them to observe the instinct of imitation in children.

---

[1] Catalogue and Circular of the State Normal School, Worcester (Mass.), 1890, p. 23.

By the courtesy of Mr. Russell I have read a few of his students' reports under the rubric *Imitation*. These records show that the students have been taught to see and appreciate the importance of the common, normal activities of children. The following examples from the few that I have read indicate this; and they show also how the commonplace becomes interesting if it be concrete.

S. watched her children during a recess. "Two children began to play 'See-saw' (a game in which children take each others hands and sway back and forth in rythmic motion). In about two minutes as many as 34 out of 50 children began to play it."

"The band was playing on the street and quite a number of children were gathered around to hear it. Some boys, about nine years old, stood apart from the other children and made all the motions that the men did. When the men turned the pages of the book, the boys did the same."

"Helen has one of these little cloth caps with a visor, and she always lifts it just as her father does his hat, when she meets any one whom she knows. Sometimes she forgets it, but as soon afterward as she thinks of it she will take it off."

"I have been watching W. and L. for a number of months, and I find that, almost without exception, if one does anything the other will imitate it. Both have small rocking-chairs, and, if W. sits down in his chair, L. will sit down in hers. If L. rolls marbles on the floor, W. will also."

"While I was examining the children's writing, Carrie asked me if she might take her slate home at noon to show to her mother. Immediately afterward six or seven other children asked if they might do the same thing."

"Bessie was digging in the snow and her cloak was unbuttoned and flying open. I said, 'Why Bessie, why don't you button up your cloak?' She answered 'Don't you see I'se working like an man, and mans has their coat unbuttoned.'"

"Whittemore was reproved by his father, Mr. S., because "he had painted the whole of the horse's back a bright blue. The next day Mr. S. came in and called Whittemore to him, saying, 'What made you paint that horse again, after all I said to you yesterday?' 'Whit'more didn't do it, papa, me do it myself,' spoke up Florence. Whittemore had left the paint where Florence could get it, and she had painted the legs up as far as she could reach."

The work is not merely that of collecting and labeling isolated facts. The observations furnish material for compositions and data for study in the class in Psychology. The subjects of graduating essays in recent years are suggestive. Among them are the following:

Continued Interest in the Same Play; Children's Fears; Falsehood in Children; Children's First Attempts at Art; Imagination in Children; Children's Relations with Animals; Children's Make-Believes; The Savagery of Childhood; Children's Motives; The Laughter of Children; What the School Child Thinks of; How a Child Reasons; Plays of Children; Superstitions of Children; Childhood of George Sand; Wordsworth's Estimate of the Child; Helen Keller; The Child in George Eliot's Writings; Preyer's Observation of his Child; Advantages of a Country Child; Children's Collections; The Child's Arbor Day; Morals of Young Children.

The principal has kindly allowed me to read some of these themes; and I select from them the following passages that illustrate the life infused by such observations into the proverbially platitudinous graduating essay. The first selection is from a paper on Children's Fears.

"Among our observations of children are some cases of fear so odd that they deserve mention. A child, who had always lived opposite a livery stable, was, until five or six years old, afraid of carriages, and screamed violently if taken to drive in one. A former pupil of this school had a strange fear of passing a house where the windows were broken. She always went by with as little noise as possible. A lady was able to keep her little son in the house by laying a feather on the door-step. He was so much afraid of feathers that he would never pass it. Another mother prevented her little girl from going up a forbidden flight of stairs in the same way."

The following reports a prolonged study of the same child: "For a few months it was my fortune to be associated with a child, about ten years of age, who had a very imaginative mind; and I was with her two or three months before having the least idea what she was thinking about when silent. She was an only child and much of her time was spent alone. It was only by feigned preoccupation, or by entering heartily into what she was doing, and by using tact in asking questions, that I found out some of her plays. In one play this child was an explorer of a new country. She drew a map of it on paper. It somewhat resembled the map of Massachusetts. The lakes and rivers were named after some of her friends, as the Williams, Dean, Jenkins, and Brooks rivers. Some of the lakes were named the Bear, Buffalo, Goose, and Cat lakes. She also had a map of a city in which the streets and public buildings were named after her friends. I visited this child after a severe sickness of a number of weeks and asked her if she had not been sick a long time, and if during her sickness she had not been lonesome, as she could not see children. She said, 'No,' but was afraid every day that some child would come in and see her, also said that since she had begun to get better, she had fun in playing alone. When I entered the room, I saw a large number of boxes and bundles on the bed. She then told me she was playing it was Christmas, and had been to Boston to buy presents for her dolls. . . . She was an authoress and wrote a number of stories, many of which I think were original. She also wrote an arithmetic and reading-book. At one time I found that for weeks she had been playing that she was a rich baroness and owned all the houses in the neighborhood. These houses were filled with visitors, some having to sleep on the sofas. . . . She took me around in the different rooms, telling me how she played each room was furnished; and, the description was so plain, I seemed to see each object as she described it, including the lace and silk draperies, velvet chairs, and floor covered with fox-rugs, etc. Her mother before this had called her down stairs, and the child said she played it was one of her visitors who had come to bid her good-bye. The child's mother has a large book in which she has flowers, leaves, and grasses from different parts of the world, including Mount Blanc, Westminster, Jerusalem, Mount Washington, and other places. This child has a similar book she has made, and I think not more than one or two have seen it. It is hidden in an old box because she is afraid some one will see it and laugh at her. Under one flower is written, 'From Abraham's grave;' under a twig, 'From Moses' burning bush;' and some are from Italy, Switzerland, England, but most of them from Jerusalem. I think she values them as much as if they had really come from these places."

The following is from an essay on "Children's Make-Believes:"

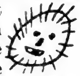
"Two children, eight and four years old, were very much in the habit of talking about what they did in Fairyland. At the very first a need of names was felt, and Inkstand was chosen. The girl was called Violet and the boy Valentine. They needed playmates, and, of course, in that land were other boys and girls. Dandy Hearthrug and his sisters, Blossom and Snow-flake, were added to the shadow-world. The girl, in a list of books, happened to see the name Madcap Violet, and added Madcap to her name. She read of Spitfire Pansy and liking that annexed it also. In this way name after name was added until the girl answered to Madcap Violet Spitfire-Pansy Mignonette Heliotrope Inkstand. The boy to Valentine Dandelion Letter-lover Inkstand. The baby girl was adopted into their family before she could talk, and was treated with great contempt if she made any mistakes or failed to understand. They went to an imaginary school, and the punishments inflicted by the oldest were keenly felt, although existing purely in the imagination. Their 'Dan Hill' was almost equal to Peck's 'Bad Boy.' As these characters increased some means of representing them to the eye became necessary, and spools were selected. These people were very distinct. Hearthrug and Hill were always themselves and were never confounded or mixed up. It is interesting to know that a large part of these people were taken from their reading. 'Nemo,' from 'Twenty Thousand Leagues under the Sea,' while preserving in essentials the characteristics given him by Jules Verne, so that any one would have recognized him, had the points that impressed the children most, as the mystery surrounding him, much emphasized. What do the children use to help them make believe? An india-rubber plantation was laid out under the sitting-room table; the paths in the forest were marked out by strings; the house was an old paste-board box; the stove a rusty iron nut; a geography served as the bank of the Amazon and a wharf. Surely a valuable hint for teachers. And the children enjoy the illustrations better the ruder the apparatus. I have known the legs of a chair to answer grandly for maple-trees, and days were spent in sugar-making. A sand heap has been the starting point of a populous village, where town-meetings were held and elections were carried on. This land of the 'make-believe' is almost wholly unexplored; but it contains many a valuable lesson for an earnest, sympathetic worker. It is hard to find out much about that country. The children do not understand it themselves, and wouldn't tell you if they did. You will need more skill than any spy of an enemy's land, would you obtain even a glimpse of the doings of the shadow people. For their imaginary world is really a shadow of this, though much distorted by their ignorance. If we could only learn how these fancies grow and develop, and could follow that method in our teaching, one of the greatest problems of education would be solved. Things learned in that country are rarely forgotten."

Use made by a Class in Psychology of the Normal School Records of Observations of Children.

The papers recording observations classed under the head of "Imagination" were distributed among the pupils studying psychology, each pupil taking about ten papers. A week later the pupils reported the results of their examination of the records, each student making a simple classification of his results under different heads. This brought out the fact that many of the divisions made by different pupils, and placed under different headings, were really alike; and that a reduction in the number would give a better notion of the total contents of the records. The suggestion of the teacher, that all the records should now be put into the hands of a committee of three pupils for examination, had already been anticipated by the class, who at once selected the committee. After another week this committee reported as follows: [Illustrations are added under each rubric.]

1. Attributing motions and actions of human beings to insects, flowers and inanimate objects, or simple personification: bees praying, flowers drinking, dishes feeling cold and wet, and getting dirty on purpose. 32 cases. 2. Words of unknown meaning suggest fantastic ideas: cholera morbus suggests colored marbles; dapple gray, something pleasant; salt rheum, a room of salt; glory to God in the highest, glory to God in the hyacinth; tobacco, Mr. Bacco. 6 cases. 3. Mechanical invention: making a doll out of a stick of wood with a rag tied on the end. 9 cases. 4. Concerning death: people caught up like fish. 2 cases. 5. Association: Jimmie saw a large fire and said that it was like the 4th of July because there was a procession and fireworks. 5 cases. 6.

Fancy: a child thinks that stars are holes in the floor of heaven, and if she watches closely enough she can see the angels passing over. 22 cases. 7. Fancied or real resemblances: a muff looks like a cat; the musical 𝄐 like a frog's head. 64 cases. 8. Imagining things so vividly that they seem realities: thought she was at her mother's wedding, and graphically described it, and was very indignant when told she was not there. 21 cases. 9. Lies: (*a*) for sympathy: a girl describes untruthfully the abuse that her mother subjected her to; (*b*) in a boasting contest: one boy said he got up to his chin in snow, and another said he got up to God; (*c*) without apparent purpose: a boy said the baby's name was Dorothy Maple Sugar. 47 cases. 10. Imaginary companions: a girl played with and talked to two blocks of wood which she called her children. 7 cases. 11. As shown in children's plays: a child exclaimed when an old empty coffee pot was upset, "Oh, my coffee's all spilt!" 4 cases. 12. Believing stories literally: a child thinks bears will chase her when she has been naughty because she has read or heard of such things. 5 cases. 13. Imitation: (*a*) animals: a boy pretended he was a horse, and would not do certain things because it was impossible for a horse to do them; (*b*) imitating older people: Agnes saw her mother blow on a finger that she had burned, since then whenever Agnes gets a sliver in her hand or otherwise hurts it, she offers it to somebody to blow on. 12 cases. 14. As regards the heavens: C. was watching the snow, and said, "I guess God turns the weather with a wrench and then the snow and rain comes down." 10 cases. 15. Phantasy: a child was very much afraid of a portrait. No matter where she was she thought that the eyes turned to look at her. 7 cases. 16. Exaggeration: K. said that a man waved a match to and fro in the air and that it blazed way up high. 2 cases. 17. Inferring one thing from another: L. heard that a man who was convicted of murder had *murderer* written on his forehead. He thought that his old uncle whose forehead was very much wrinkled must have the same letters on it. 9 cases. 18. As shown in drawings: a child drew a picture of a man like this cut



He said that the man had something in his mouth that was blowing his head off. 3 cases. 19. Pure imagination: a child who had never seen a snake thought that it must be a quarter of a mile long and as large round as a tree. 5 cases.

HENRY W. BROWN.

ANTHROPOLOGICAL INVESTIGATIONS IN SCHOOLS.

BY FRANZ BOAS.

Physical anthropology has for its object the study of the human body and of its functions. It deals more particularly with the variations of form and function, caused by varying conditions or founded on inherited peculiarities. This object is attained by dividing the human species into classes which are treated separately. Such classes or groups may be founded on difference of race; they may be founded on difference of social status; they may be founded on difference of geographical surroundings or of age. The peculiarities of each group and their differences are brought to light by a statistical treatment of the individuals comprised in each class and the causes of these differences are studied by comparing the various groups.

The differences between these groups are not confined to the adult stage, but develop during the period of childhood and adolescence. Therefore the study of the latter forms a most important branch of anthropology. It appears that the differences between the classes are comparatively slight in the beginning but develop during the period of growth, so that the adults of the various groups show much greater divergencies than the children of the same groups. These differences in the adult stage may be brought about by earlier arrest of development in certain groups than in others, or by development in diverging directions. Differences of form are generally accompanied by differences of function.

From these general considerations we must conclude that a study of the anthropology of children is of the greatest importance for a knowledge of the conditions and laws of growth. It appears probable that the mode of growth of a city population and of a country population will be found different, as the adult forms show certain differences. The American child grows differently from the European child, for there exist differences between the adult American and the adult European. The child in New England grows differently from the child in Kentucky, as the adult forms of the two countries are not the same. We may also assume that the child growing up under favorable sanitary conditions will develop differently from the less fortunately situated child. Even where the adult forms are identical we may find differences during certain stages of development which may shed an important light upon questions referring to growth.

The problems which were touched upon here have a great importance to the teacher, because the functions of any organ and also of the whole body are closly related to its development and form. The nature of this correlation is by no means clear, but remains largely a matter of investigation. Nevertheless, its existence cannot be doubted. One of the most striking cases of this kind is the result obtained by Axel Key in his extended investigations in Sweden. He found that the liability to sickness decreases with increasing rate of growth and increases with decreasing rate of growth, so that the one may be taken as the measure of the other. We know from other sources that skill in the use of certain parts of the body cannot be attained after growth has been completed, but that it must be attained during the period of development, so that the special nature of practice has an influence upon the function and probably also upon the form of the organs in the adult individuals. Piano players and rope dancers may be mentioned as instances of this kind.

The various parts of the body do not develop at the same time. Therefore we must suppose that each has its peculiar time during which it is best adapted to being trained. For these reasons the teacher has an immediate interest in the prosecution and in the results of investigations upon the bodily development of school children.

Most researches on growth have been made from purely anthropological points of view, the relation of the investigations to school work having been brought out only lately. Quetelet's investigations in Belgium were among the first that were founded on extensive material. The subject did not receive, however, great attention, until Dr. H. P. Bowditch made his classic study of the school children of Boston and vicinity. His measurements included height standing, and weight.[1] Simultaneously Dr. Charles Roberts[2] carried on similar investigations in England. In his work are found a considerable number of data referring to the development of the various parts of the body, some of which have been taken from Quetelet's tables. Dr. Bowditch's measurements were repeated in Milwaukee by Geo. W. Peckham,[3] who showed that certain important differences in the rates of growth prevail in that city and in Boston. Series of observations of less extent were made by Pagliani in Turin in 1879,[1] by Kotelmann in Hamburg in 1877,[2] by Daffner in the military schools of Bavaria in 1884.[3]

---

[1] The Growth of Children. Eighth and Tenth Annual Reports of the State Board of Health of Massachusetts.

[2] Manual of Anthropometry. London, 1878.

[3] Sixth Annual Report of the State Board of Health of Wisconsin.

Michailoff carried on an investigation on a closely allied subject in Moscow, where he studied the development of the chest, a question which was also included in Dr. Roberts's measurements. An interesting article on this work has been written by Erismann.[4] Another investigation carried on in Kretcy, Russia, by I. A. Müller has not been accessible to us.

Lately the superintendent of schools of Freiburg in Saxony had a series of measurements made in order to determine the proper height of seats for scholars of various classes.[5] The most important work of this kind and one which claims particular attention of educationists because it has been undertaken on a large scale and solely in the interest of schools, is the inquiry of the Royal Swedish Commission whose work was edited by Axel Key.[6]

All these investigations were based on statistical material that is, on the treatment of a long series of observations, but no effort was made to follow the same individuals through a series of years. Although Vierordt claims that the former method will give just as good results as the latter, provided the number of observations is sufficiently large; it must be born in mind that the latter method, the individual method, will give many results which the general method cannot give and that it is the only method which will allow the educationist to apply the results of the general method to practical cases. We have a series of investigations based on this method. Liharzik in Vienna measured 20 children regularly from the day of their birth to their 8th year and 200 boys from their eighth until their fourteenth year. The first to make an investigation of this kind with special reference to school work was Dr. Wretlind,[7] who measured the increases of children during vacations and during the term. In Denmark Dr. Vahl made semi-annual weighings of the girls at Jägerspris. He arrived at the conclusion that weighings of this kind are the only means of controlling satisfactorily the sanitary conditions of school children.[1] The studies of R. Malling—Hansen[2] indicate that the development depends upon climatic conditions in so far as the winter seems to cause a retarding influence. If this is true schools in northern countries ought to have longer summer vacations than schools in southern countries in order to make up for the lesser growth during the cold season. An important investigation of this character has also been made in Germany by Dr. Landsberger in Posen,[3] who followed the growth of 104 children through a period of five years.

---

[1] In Untersuchungen zur Naturlehre der Menschen und der Thiere von F. Moleschott, XII, p. 89.

[2] Die Körperverhältnisse der Gelehrtenschüler des Johanneums in Hamburg. Ztschr. d. Königl. Preus. Statist. Bureaus, 1879.

[3] Archiv. für Anthropologie Vol. XV, Supplement.

[4] Zeitschrift für Schulgesundheitspflege, 1888.

[5] Ztschr. I. K. Sächsischen Statist. Bureaus Vol. 35., No. 1, 2.

[6] Läroverkskomiténs betänkande. III. Bilaga E til läroverkskomiténs utlåtande och förslag. Redogörelse för den hygieniska undersökningen afgifven af komiténs ledamot Prof. Axel Key. Stockholm, 1885. A German extract has been published by Dr. Leo Burgerstein under the title: Axel Key's Schulhygienische Untersuchungen. Hamburg, 1889. See also, International Medical Congress, Berlin.

[7] Wretlind. Jakttagelser rörande helsotillståndet i några af Göteborgs flickskolor. Eira, 1878.

Most of these investigations deal with the growth of the whole body. They refer only incidentally to the growth of certain parts of the body. Valuable material on this point is, however, contained in Dr. Landsberger's investigation. He found, for instance, that during school-age the diameters of the head change only very slightly, while the growth of the body as a whole is very rapid. The next step to be taken in researches of this kind will be the study of the growth of individual parts of the body in connection with their functions. The growth of the hand, together with its increase in strength, ought, for instance, to be studied. The remarkable changes in the curvature of the skull, the relative development of face and head; in short, the development of each part of the body ought to be made the subject of most searching and careful inquiry. The results to be obtained from investigations of this kind will undoubtedly teach us how to develop the faculties of children each at its proper time.

---

[1] Mitteilungen über das Gewicht nicht erwachsener Mädchen (1874–1883). Medical Congress of Kopenhagen, 1884.

[2] R. Malling-Hansen. Perioden im Gewichte der Kinder und in der Sonnenwärme. Fragment III A and III B. Kopenhagen, 1886.

[3] Archiv für Anthropologie, XVII, pp. 229–264.

LITERATURE.

The Story of a Sand Pile, by G. STANLEY HALL, Scribner's Magazine, June, 1888.

The wife of a well-known Cambridge, Mass., professor who spends summers in a farm house, in a small town, had a load of sand hauled from a distant beach and dumped in the yard for her two boys then aged five and three to play in. The "story" is what grew out of this pile of sand in the course of nine successive summers. Every other interest paled beside the wells, hills, mines, quarries, buried treasures, tunnels, roads, capes, bays, pictures drawn with sticks, etc., which were made in the sand, as all who have read Fröbel would have predicted. A "cave dwelling" or "ice house" developed into a house made of two bricks and a board; later men and horses were whittled out of wood, and the forms conventionalized, and cows made of pasteboard, and then on a jig saw, pigs and Vermont steers, etc., followed. The seventh summer when the writer saw it there were a dozen farms each five or six feet square, with houses and barns about ten inches square, fences, walls, pastures, mow lots, etc., each owned by a different boy invited in from the town. Real crops were raised, and gates, pig troughs, hen coops, a sewerage system centering in a sunken tomato can, barns with stables, doors that bar against horse thieves, real hay cut, dried, baled and placed according to quality or stacked with a skewer for a stack-pole were developed. Barns were more interesting than houses. A tiny well was dug and stoned and a long sweep made with counter-weight and a bucket made of a cherry stone. The adult population were whittled men and women about two inches high, named from real men in town. Each boy has also the name of the head of his wooden family, and if M. S. in town did a mean thing, the boy and this wooden puppet bearing the name M. S. are threatened with expulsion. If it rains at night the boys get up to bring in their puppets lest they catch cold, carry them in their pockets to the city with them to see the sights, or send them away by post or express that they may be "traveled men." New men are occasionally added, made according to the old pattern which the boys might greatly improve on now. The wishes and thoughts of the boys are ascribed to their puppets. Excellent training in wood work was involved. The evolutions of the plough *e. g.*, a paddle, a pole with a cut branch and drawn by the tip end, then a metallic point, home made, then two handles and a knife. Rake, shovel, hoe, ax, pick, harrow, pitchfork, ladder, stone boat, gravel sieve show stages of evolution. Milk cans, pulleys, wheel-barrows, harnesses, farm-wagons, milk carts and timber trucks were made. Carpentry was stowly monopolized by a skilful boy. One attempted brick work, another moulding pottery, another a tiny newspaper with an edition of 10, devoted to the interests of Sandpile. Candles were at one time made from a tiny mould. Two sailing vessels lost boom and gaff in a race. Cord-wood is cut, piled and sold, hay cut on the distant marsh. At the store cans of pickles were put up, candy was sold by the barrel, barberries were tomatoes and butternuts were watermelons. The store declined, as its wares were in a sense unreal, and a declaration of bankruptcy, a bill of sale and an auction closed its career. The currency was cut out with a peculiar gouge of a species of felt which could not be counterfeited. At the opening of the last season 90 dollars and 50 half dollars were given to each boy and the gouge and felt representing mint and bullion laid up to insure a limited coinage. In meetings to determine what to do with the bankrupt store-keeper pro-rata contributions, and redistributions were voted down in favor of inflation by giving each boy an additional 10 dollars. This affected prices. Town meetings were summoned by crier and bell. Each boy held his puppet and turned up its arm for aye or no. Flag-man, pound-keeper, surveyor of roads, whose duties after a shower were considerable, a sprinkler and waterer of crops, taxation was discussed but the latter was to be based on land, and the boys could not measure the irregular farms. A fine system had to be vetoed by parents to prevent quarrels, as were a jail and gin-shop. "Why do you have no church" I asked, "Because we cannot play in sand piles on Sunday." "And why have you no school?" "Because it is vacation" they said exultingly, "and we do not have to go to school." The house is Cambridge, and its piazza Concord. A place where worms are dug for fishing is Snakerville. A spot in the yard where lay two Oswego starch boxes is Oswego. Each spring the houses and barns are brought out and set up and all traditions of the preceding year preserved. A general habit of settling disputes often brought to issue with fists, by means of meetings and speechifications arose. The interest in and reality of it all fluctuated, sometimes the boys would rise early to pour out grain for their horses, and the entire day is given to the town, and its interests are so diversified and all comprehensive that nearly all the boys do the entire summer is for it in some way, and when fall brings them home to Cambridge life seems a little cheap and barren. They could not complete a system of sewerage and streets, etc., for the city was too complex for them. One of the parents said the sand-pile had been of about as much educational value as all the eight months of school. Problems that puzzle older brains have been met in simpler terms and solved wisely and well. Activities and observations manifold and productive, knowledge of institutions and administration have all been quickened. The boys had grown more companionable and learned many a lesson of self-control and self-help. The parents had been able to control indirectly the associations of their boys in a very mixed boy community, and to have them under observation without restricting their freedom, and much personal and social morality had been learned in this often complicated modus vivendi. It was a kind of the education according to nature of which so much is heard. Each element of this vast variety of interests is an organic part of a comprehensive whole, compared to which the concentration methods of the Ziller shool seem artificial, and as Bacon said of scholastic methods inadequate to the subtlety of nature. All the power of motion arising from a large surface of interest is here turned on to the smallest part. Had the elements of all the subjects involved in the sand-pile, industrial, administrative, moral, mathematical, etc., been taught separately as mere school exercises the result would have been worry, waste, and chaos. Here is perfect, mental sanity, and unity, but with more variety than in the most heterogeneous and soul-disintegrating curriculum.

As the boys approached fourteen or fifteen Sand-pile seemed gradually to lose its charms and to appear childish and unreal. Unimaginative boys had always proven a source of as great annoyance in their way, as little girls who had no feeling for it were in theirs, to the boys who took it all in fullest earnest. Boys who had begun to imagine themselves young gentlemen must be kept out. The golden age of this little republic had passed when the writer saw it. A young lady had painted on lace curtains to one or two houses, and paint had begun to come in to cover bad wood-work, and there were signs of over-refinement and luxury. Tools were often made for beauty more than use. The village was near the roadside and attracted increasing attention, and had been photographed, and noticed in a local newspaper. Thus the applause of spectators adulterated the pure play interest of the boys and brought self-consciousness. They were more prone to intervene in the natural working out of problems and events like a special miracle-working providence. There was decreasing autonomy heralding the decline of full blooded boyishness and the far-away dawn of a new and reconstructed adolescent consciousness.

Boy Life in a Massachusetts Country Town a Quarter of a Century Ago. By G. STANLEY HALL. Proceedings of the Am. Antiquarian Society, held at Worcester, Oct. 21, 1890, pp. 107-28.

This is a vacation study of old ways made by interviewing all the oldest inhabitants in Ashfield, Mass., supplemented by records of the writer's vacation visits when a boy. Home industries in wood are first described, covering several score articles including play saw-mills, cross-bows, traps, windmills, veins, pop-guns, etc., made by boys. Then came woolen industries, from feeding sheep to carding, spinning, reeling, dying, weaving, knitting, all of many sorts and with many technical terms. Flax industries and chileren's games follow, with many illustrations of old New England wit and anecdote. All the contents of the old fireplace, and its surroundings, tinder box, chafing dish, runlet, noggin, slice, toasting and flip irons, porringer, trivet, skillet, piggin, dye tub, crane and lug-pole, roster, sausage-stuffer, dried ham, rennet, pumpkin ringlets, red peppers, etc., here described. Then comes a list of grandma's herbs dried and hung in rows of bunches in the attic. The contents of garret, cellar, shed, buttery, the processes of making cheese, candles, soap, foods, furniture, the evolution of the sugar camp, and of butter making, baking in the big brick oven, birch brooms, geese-picking, road-braaking, broom-making, old-fashioned tannery, home made drinks follow. Why, it is asked, are not these processes as worthy of investigation and illustration in museums as the no more rapidly vanishing custom of savage tribes? The commonest industries of these little towns, planting, fertilizing, harvesting each crop, have been revolutionized within the last few decades, while the religious beliefs, domestic and social customs, ways of doing business in these communities are all fast changing. The women are often worn with work, the men shiftless, children few and poor. Did earlier generations work too hard in cutting trees, digging stumps, laying the hundreds of miles of stone wall? Were the conditions of life too severe? Is our race not adapted to the new conditions of soil, climate, and water, and is it as Dr. Jarvis said, still a problem whether the Anglo-Saxon race can thrive in its new American home, or is this but an incident, an eddy in the great onward current of progress? The author has no answer, but knows nothing more sad in our American life than the decay of these townlets.

Despite certain evils this life, at its best, appears to have constituted about the best educational envinonment for boys at a certain stage of their development ever realized in history, combining physical, industrial, technical with civil and religious elements in wise proportions and with pedagagic objectivity. Again this mode of life is the one, and the only one, that represents the ideal basis of a state of citizen voters, as contemplated by the framers of our institutions. Not only is it more and more refreshing in our age and especially in the vacation moods to go back to sources, to the fresh primary thoughts, feelings, beliefs, modes of life of simple, homely, genuine men, but our higher anthropology labors to start afresh from the common vulgar standpoint as Sorcrates did, from what Maurice calls the Ethos, and Grote the Nomos of common people, and of a just preceding and vanishingtype of civilization, to be warmed with its experience and saturated with its local color.

Nowhere has the great middle class been so all-controlling, furnished so large a proportion of scientific and business leaders, been so respectable, so well combined industry with wealth, bred patriotism, conservatism and independence. The farm was a great laboratory, tending, perhaps, rather more to develop scientific than literary tastes, cultivating persistency, in which country boys excel, if at the expense of versatility. It is, says Prof. Brewer, the question with city parents what useful thing the children can do, while in the country, where they are in great demand on the farm they are, in a sense members of the firm. Evenings are not dangerous to morality, but are turned to good account, while during the rowdy or adolescent age the boy tendency to revert to savagery can find harmless vent in hunting, trapping, and other ways less injurious to morals than the customs of city life. Some such training the heroes of '76 had ; the independent condition of communities like this was just the reverse of that of the South at the out outbreak of the Rebellion; such a people cannot be conquered, for war and blockade would only drive them back to more primitive conditions, and restore the old independence of foreign and even domestic markets. Again, should we ever have occasion to educate colonists, as England is now attempting, we could not do so better than by reviving conditions of life like these.

The article closes by mentioning an interesting new educational experiment, as a bright spot in this sombre present, which was somewhat feebly but happily tried in Ashfield, as a result of the recently awakened interest in its own antiquities : A prominent citizen, once a teacher, has studied from sources largely unprinted the history of the town, which connecting it with the Revolution, and even the French and Indian wars, and on the lines of an old map he has made of the original town surveys, gave an hour per week during part of a winter in teaching history, from a local standpoint in the little Academy, with its score of pupils, and aluding to many of its antiquities such as this paper has referred to, with free use of the museum, and all with excellent results. A village pastor, who is an excellent botanist, took the class a few times each each year on excursions, and the older girls have gathered and pressed for him in a school museum all the Ashfield plants and grasses, on the basis of which he taught a little botany gratuitously. The doctor co-operated with them and talked on physiology and hygiene, and brought his microscope and other instruments. A student of an agricultural college has gathered all the Ashfield rocks and minerals, and taught geology. He has began to gather cabinets of the local animals, birds, eggs, butterflies and insects, which a summer resident makes a basis of some instruction. A summer boarder was drafted in to teach drawing to all comers half a day per week. This experiment in what I consider co-operative education, begins at home, with what is nearest and often dispised. The local Faculty about the teacher give but little time, but their teaching is full of interest and stimulus. They strengthen the teacher whom they really guide, and bring home and school nearer together. This new carriculum is without expense, and altogether may prove a suggestive novelty.

Children's Collections. Miss Sara E. Wiltse, who has been for several years a systematic observer of childhood, sent to the writer some time ago along with a mass of other valuable but as yet undigested material, the answers of 227 Boston schoolboys of fifteen and sixteen years of age, to a short set of questions about their collections. Of this number only nineteen had never made collections they deemed worth reporting. One hundred and forty-four reported collections of two kinds of objects; ninety-five of three kinds; twenty-eight of four kinds, and a few of five and more kinds. Stamps were most frequently collected; then followed in order of frequency, coins; marbles, sometimes to the number of several thousand; advertising or business cards; pictures; stones, ores, minerals, and sometimes even bits of brick and chalk; woods, leaves or flowers, insects, eggs, shells; scrap-books of all sorts (generally funny stories), imprints of the die of local post-offices, riddles, autographs; buttons, nut-galls, bird's nests, smooth or colored stones, and even toadstools, peachstones, lists of names, tools and many other things. Of the three most common collections, that of marbles nearly always comes first, and begins, on the average, very soon after the beginning of public school life, and lasts from three to six years. The passion for stamps comes later, and coins later yet; the average interval between the latter, as well as their duration, cannot be inferred from the data. These collections have been made quite independently of school work, and, so far as can be inferred from the writing, spelling and syntax of the written returns, the brightest boys have made most collections, and in each of these respects the nineteen boys who have no collections to report are below the average, though by no means always the worst.

Several observers have sent in returns from school-girls of equal age to similar questions, but as yet the returns are too few and too imperfect to have much statistical value. It appears, however, that the passion for collections, is less strong in girls, and the objects most often collected are different. Little girls often collect bows from adults, keeping tally on bits of paper, and older girls collect flowers, cloth and paper patterns, bric-a-brac, keepsakes, etc., as well as in many cases making the same collections as the boys. It is evident that more data are wanted for both sexes before the effect of age, temperament, locality, conditions of life, sex, etc., can be determined, and it is to be hoped that teachers or superintendents who have superior facilities will address themselves to further studies of this important topic.

It seems already plain, however, that this instinct is a strong and almost universal force in human nature, which the school should study and use more than it does. It is one of the chief juvenile expressions of the instinct on which the induction and specialization of natural sciences rests. Museums of all sorts and sizes, literary collections, and even the gathering of the above data about this instinct rest upon it. In fact, almost any and every interest may prompt collections, and be made the nucleus of scientific culture sometimes for the very boys who get least from the ordinary school. There might easily be in most country towns, if not in each school building, small working collections, made largely by the children themselves, illustrating local geology, woods, plants, birds and animals, mounted or put up in the most educational way, and, with a few pictured books, made the basis of general or class exercises. This, we believe, may at least be suggestive in solving the great question how more and better natural science may be taught in schools of the lower grades. Teachers of literature, also, even in lower grammar-school grads, have induced their pupils to gather from many sources, by scrap-books and otherwise, literary specimens which especially interested them, and thus, as it were, to make individual reading-books—their own in a sense which is of great educational significance.

But if data like the above show the force, they do not suggest the danger attending this passion, viz: that it degenerates toward the blind mania for collecting objects (*Sammeltrieb*) seen in certain forms of mental disease, and even in some species of animals. Our returns show scores of boys who collect stamps or coins with very little of the knowledge of the geography and history needful to give a rational interest to their collections; who gather blindly and mechanically large numbers of eggs with no knowledge of the species, or merely the tails of birds or squirrels, with not only no knowledge of their characteristics or manner of mounting, but without even the most common hunter's knowledge of their habits. When we reflect how much might be taught incidentally by the rapid way of suggestion, if given while these interests were at their hottest, and put tactfully, perhaps in the form of directions for improving collections already begun, we can realize how considerable is the educational loss. And yet correctives are not so easily made effective as would at first seem. Collections do not always imply the knowledge or even the high degree of mental curiosity they are wont to suggest. Museum values and scientific values are often divergent, and may be almost opposite. Much might be written of the cases in which undue haste to catalogue or to collect had robbed objects of scientific worth. How often, again, do we see in our laboratories even advanced students making and mounting histologic sections day after day, to get good collections of slides, in a thoughtless and mechanical way, or even in original research repeating observations and enlarging protocols without so carrying everything in mind that each product is subjected to the highest degree of scrutiny it is capable of as they go along, and thus lose time under the illusion that they are doing real scientific work. It is such hard work to think, and there are so many proxies and simulacra of thought that deceive even well-trained men—it is so much easier to get ready to think, as the miser hoards in order to get ready to live—that the way of true science is indeed straight and narrow.

All this, nevertheless, does not make us for a moment doubt that this is an educable instinct, and that it has head enough, wherever it is wisely turned on to school mechanism, to quicken especially all those elements of school work that are associated with Comenius, Locke, object-lessons and science-teaching. It is not ready-made, purchased, but individual collections, with the sense of personal ownership on the part of those who made them in no wise relaxed, but used in a way to make the school-house interesting, because reflecting at the same time the local characteristics and local pride, that we need. How each of the above kinds of collections and others can be best utilized in or by the school, is a problem which only the experience of the practical teacher can solve; and when it and the other unfinished questions above suggested are determined, it will make, if we are not mistaken, a valuable as well as for the most part a new chapter in pedagogy.—EDITOR.

Rudimentary Society Among Boys. By JOHN JOHNSON, JR. In Overland Monthly, October 1883, and afterwards enlarged in the Johns Hopkins Historical and Political Studies, 1884.

This is an interesting account of the customs of the boys of the McDonough School Farm of 800 acres near Baltimore. When this excellent and well endowed school was opened some 18 years ago all this land and the nut trees, eggs, rabbits, etc., were common. As the supply became limited, an age of force arose, and then an age of customs and law. If a nut tree has been shaken, custom now requires a second party to pile up all nuts on the ground before shaking the tree for themselves. The date when to begin shaking a tree is settled by vote. Each boy discovering a bird's nest or squirrel's den tacks up his name on the tree and all other boys respect his title. Property in land was gradually evolved by preempting the best spots for rabbit traps, and prescribing the distance at which the next trap should be permitted. Finally all the best land fell into the hands of a few who even acquired the right to bequeath it when they left school, till a socialistic party arose against these monopolists and clamored for redistribution, but the old system of commons could not be maintained. As the rabbits became the property of a few owners, they could not eat them all, and so bartered them for toys, till finally "butters" or the one ounce of butter given to each boy at a meal, became the monetary unit. A rabbit's leg, e. g., cost three butters, one whole rabbit 10 butters, a knife from six to thirty butters, etc. Finally credits in butters were established, and even a currency on a butter basis. This little sketch is a microcosm of nature's making, and illustrates the way in which boys so rapidly repeat the agrarian and social history of the Arjan race. Most interesting perhaps is the way in which the 40-yard radius was established around each trap by the big boys who began by dropping heavy stones on all traps they found set too near their own, how single owners gradually multiplied their traps, how their claims were slowly made to hold over to another year by leaving his traps in place through the winter, a right not thus perpetuated for nut-trees, as paper labels were destroyed during the winter. The trap must, however, not only be in sight, but be re set to re-establish the claim in the spring. The right on leaving school to bequeath their rights has been strongly resisted. Visiting the traps, which is best done before light, is laborious, and is often done by vassals. An agrarian party once became so strong as to enforce the cession of a number of less productive spots. Upon such questions as the date of the nut-harvest, or how ownership of trees, etc., shall be established, after much informal talk, each of the several proposals is written and posted, to be signed by each boy preferring it. The common punishment among the boys is "bumping" or swinging the body against a tree. To avoid fight, lot, by guessing odd or even in marbles, is appealed to, and after discussions very like the ancient folk. most are held. Fights are very rare, but are effective when they become inevitable. This interesting paper must be read to be appreciated.

Observations on College Seniors. A. E. KIRKPATRICK, American Journal of Psychology, 1890, p. 168.

The natural history of students is a vast subject for anthropology to approach but the material is now abundant. It exists in the 206 periodicals published by American students, in the history of student life, from the middle ages down, their corps, codes of honor, fraternities, sports, etc. If it be true that student ideals are the best materials for prophesy this is perhaps, most of all the case in matters of how and what is taught and learned. High school and University organizations depend upon the drift of student sentiment, which can be directed and controlled only to a limited extent, and usually far less than it directs and controls. This is especially the case in this country. What may be called inside academic administration has been wittily called the art of engineering as applied to the sentiments and ideals of later adolescence. Not only are the propulsive tides of college opinion all-controlling so that it is therefore more and more necessary to study them and set all the time-pieces of higher education by them, but such study has a peculiar facination of its own, and as a field of special research it has all the charms of novelty. A body of young men, exempted from the severer duties and responsibilities of life and bread-earning, fed, clothed, supported by parents or by funds provided by many donors ancient and contemporary, who have consecrated their substance to highest uses, themselves select youth of the better classes, taught by men selected for ability and devotion and brought into contact with the best products of the choicest minds of all times and lands, in the last stages of preparation for entering the most influential places in the world, it is no wonder that the spontaneous drift of their disinterested ideals is coming to be regarded as one of the most important currents of popular opinion, one of the most significant keys to the modern Volk-soul both to study and to control. Extremely and tenaciously conservative as student sentiment is of custom and tradition when it gradually deteriorates as it does in occasional periods and institutions, it may debase the entire tone and *ethos* of the place. The head of a great English school reported that so bad, and ineradicable had become the tradition and habits of the place that it should be either abandoned or start anew, with new buildings in a new place, and with new boys. The influence of student life is often far more important than the curriculum.

This study touched only very lightly a single side of a single subject. Eleven professors in the larger Eastern and in two Western Universities were asked by Dr. G. Stanley Hall to submit four questions to their senior classes to be answered in writing. The returns hardly admitted a statistical presentation, but were collated, chiefly in the words of the students, each clause representing a person, as a rough composite portrait of the position held, and the educational values of these studies from the student's standpoint of significance for teachers of these subjects. Perhaps some anthropological, as well as educational, significance may be attached to them. They reflect a side or phase of psychogenesis which an examination paper does not touch. The paper is significant from its suggestiveness, although its results are not without much interest. The questions all bear on philosophical studies: 1. Why these had been first elected? 2. What have you already gained of value from these studies? 3. What writings in this field have impressed you most? 4. What special subjects in this field have interested you most? The answers could hardly be presented in less space than the original article to which the reader is therefore referred.

Physical Training in American Colleges and Universities, by EDWARD MUSSEY HARTWELL, Ph. D., M. D., Johns Hopkins University. Circular of Information of the Bureau of Education, No. 5, 1885, pp. 183.

This monograph gives an invaluable account of the history and present state of physical training in this country and is copiously illustrated. There were four ideals of manly excellence: I, *The Greek*, of which the notes were symmetry, harmony, wholeness and joy. School was in a sense in the gymnasium, and the pedotribe was subordinate to the gymnasiarch; II, *The Monkish*: This was mediæval, ascetic, assumed soul and body to be not only independent but antagonistic, that pleasure was evil, favored fasts, vigils, scourging; III, *The Military:* The young noble was taught to ride, draw a good bow, hawk, hunt and blow on horn, to dress and tourney, and to leave letters to rustics and poor clerks; IV, *The Modern:* Ideal of a sound mind in a sound body. In the middle ages, labor in the field was common among religious orders, especially the Benedictines, while the young nobleman was training in the tilt-yard and bear-pit, and in the falconer's art. In 1511 practice in archery was required by law of every sound English youth. In 1790, Dr. Rush of Philadelphia advocated agricultural and mechanical labor in place of play as a mode of exercise and also of income. At Amherst, in 1821, each student was offered a quarter or half an acre for cultivation. Chip day, and gravel day at Amherst and Williams were set apart for cleaning yards and regravelling walks. In Basedow's school (1774), poor children worked six, and studied two hours, and rich children worked two and studied six hours. Fellenberg thought that between 9 and 18 a boy should pay his schooling by work, and exercise was often advocated only as an outlet for animal spirits, and students were encouraged to seek positions where "tips" were given. All such crude and impossible ideals failed of success, and the first gymnasium was established in 1825 at the Round Hill School at Northampton, Mass., under a pupil of Jahn, Dr. Beck, who was brought from Germany. An open field was fitted with apparatus for hut-building and games, and Jahn's book was translated. Dr. Follen, another German exile, professed gymnastics at Harvard in 1826, was seen issuing across the college yard at dog-trot with the college at his heels in single file and arms akimbo bound for Prospect Hill, and was threatened with damages for trespass by a farmer whose field they crossed. Just after the outbreak of our civil war in 1861, a great interest in physical culture was felt. Dr. Winship the great lifter introduced the severest heavy gymnastics, and Dio Lewis imported the light Ling calesthenics from Sweden with bean-bags, and gave a ten weeks course for teachers at his Normal Institute. There was an inundation of animal spirits, and it was realized that man was not a sedentary being merely. Amherst was one of the leading colleges in this direction, but in 1878 a petition for a bowlingalley was denied because public sentiment would not tolerate that game; yet the new gymnasium has not only these but billiard tables.

Pres. Stearns in 1859 reported the death of two seniors who, like most students there, were used to active occupation before coming to college and broke down from the change to sedentary life. The trustees responded by creating a professorship of physical culture to take charge of a gymnasium and the health of students generally, to lecture and to have a seat in the faculty. He must be a physician and must train, not for feats of agility and strength, but to exercise the whole body, and overwork no part of it. Amherst thus first showed how this could be done. No heavy gymnastics is required, but light gymnastics is required each day at an hour of early evening, and physical measurements of each man have been made for 25 years, and there are two prizes for gymnastic excellence.

The gymnasium of the N. Y. Athletic Club, Fifty-sixth Street and Sixth Avenue, is the most complete, and the system of Dr. Sargent of Harvard is called the most practical and scientific of any in the country. The latter and his developing apparatus are described in full. Such subjects as the number and cost of college gymnasia, the Y. M. C. A. playgrounds, sports and games, the system of Yale, physical education of women, architecture, and lists of makers of apparatus, etc., follow with many tables.

The arrangement of material is very bad. The same subject is recurred to in the latter part of the book in different places, and in ways to which the very meager index gives no cue, but the work is of great value, the ideas and conclusions well matured and sound. The policy of the bureau of publishing such valuable monographs by experts, begun by Commissioner Eaton, and carried still further by Commissioner Dawson, is highly commendable.

Physical Training Conference, Boston, 1889, p. 155.

This important conference was opened by W. T. Harris, U. S. Commissioner of Education, who thought play better than systematic physical exercise for schools because both it and mental work exercised the will; condemned the no recess movement; thought boys should play and not wait till sixty to fly kites as in China, and would see voluntary movements so directed as to strengthen involuntary and regulative functions.

DR. E. M. HARTWELL. A single muscle or contractile cell was described, its sheath, the entrance and ending of the motor nerve fibre, etc. A single muscle is a vast aggregation of these irritable cells ($\frac{1}{600}$ to $\frac{1}{100}$ in. in diameter and rarely more than $1\frac{1}{2}$ inches long) arranged in linear series called fibres, these grouped into small bundles with muscle arteries and and veins among them, and each of the 500 muscles in the human body bound up in its own sheath and connected with bones or other movable parts. Action engorges it with blood, heats it, increases the products of decomposition drained off, increases its permanent size, weight, and perhaps number of fibres, causes a low tone to be emitted, changes electric currents, makes it more quickly and discriminatively responsive to all activities in the central nerve cells of the brain. Muscle work also causes indirectly balanced working and normal symmetrical growth in all other organs. But in addition to all this, muscle work develops and strengthens the unseen cells and fibres of the nervous system. If muscles shrivel or decay, the corresponding brain and nerve parts do the same, and *vice versa*. The two are thus one and inseparable in both action and well-being. But the muscle contracts, and nerves and cells co-ordinate these contractions into the most complicated movement. The *fundamental* part of the nervous organization must always be distinguished from the *accessory*. The former is first developed, and may be represented by movements of the trunk, shoulder and elbow, which are well organized in the infant; not so the accessory of wrists and fingers. Tongue and lips come still later. In lower animals the education of accessory parts is later yet. That exercise increases the volume of the nervous system is shown by the fact that in the pyramidal decussation in the medulla the number of fibres going to the right hand and arm is to those going left as three to two. Serious atrophy, paralysis, etc., may reduce gradually the entire accessory and even much of the fundamental system. Muscle training that does not develop brain power fails of its aim. Children who have lost sight before five or six are blind-minded, but if they lost later, always think in visual images. Movement widens the field from which sense impressions are drawn. If all motions were restrained by swaddling clothes all through childhood, idiocy would probably result. Hand centres, vocal and other centres each have their nascent periods in child-growth, and if this is neglected, they can never reach their full efficiency. If the nascent time of the head, *e. g.*, is directed to lip and tongue there is not only waste but injury. The subtle materialism that realizes that all experience is playing upon nerve tissue and making it fuller of aptitudes and good habits and finer harmony and susceptibilities must never be forgotten. The main field of education is the nervous system. Like mental training the best and first training should be general and not special. By educating the accessory before the fundamental parts and functions, which is an inverted way, headache, St. Vitus dance, spasms, exhaustion and many sorts of disorders arise. The ancient Greeks and modern Germans have given most attention to physical exercise and are preeminent in intellect. One fifth of the entire population of Germany is now undergoing systematic physical training in either the popular gymnastics of the *Turnvereine* or the school or in military gymnastics. All college athletics as represented by foot-ball, boating, base-ball, etc., in this country and England are good but inadequate, and represent but a single stage, although they call out subordination, public spirit, co-operation, and reveal traits, tempers, and frame of will, etc. The play instinct should be given all possible extent. All American systems are fragmentary and defective compared with a national method which should be as regular, systematic and continued as the curricula and programs of mental training. No technical training can answer these ends.

H. **METZNER** characterized the German system of gymnastics as cultivating courage and joyfulness, as the product of many minds working on the subject for a century, as destroying strife after specialties and promoting allsidedness, as a source of great pleasure and happiness, as indefinitely diversified and thus exciting constant interest. He commended the training of the Seminary of the North American *Turnerbund* and the importance of rhythmic and class movements both free and with apparatus. He denied that the German system had been influenced by any other, but they owed much to Gutsmuths, Jahn, Eiselen and Spiers, and deplored the lamentable neglect of physical training in American schools and colleges.

C. I. **ENEBUSKE** said Greek body culture aimed first at symmetry, proportions, learning; Roman at strength, activity, efficiency, war; modern at health and power. We must clothe the frame with honest muscles till they and the body shall be faithful and efficient servants of the will. The scheduled proportions of the average man of the anthropometrist are disparaged.

NILS POSSE advocated the Swedish system of Ling. These exercises were carefully selected according to gymnastic value to correct bad growth and posture. The respiratory system is first reached, and muscle development last. Chest-weights and dumb-bells are discarded at first, as are music and rhythmic motions, but great alertness of attention to every command and motion of the leader are needed. The earl of Meath added that the economy of this system had led to its adoption in London. W. G. Anderson advocated his so called American system with 16 fundamental movements.

DR. D. A. SARGENT of Harvard gave a brief biography of himself and his system. He found some men could lift their weight between bars 20 to 40 times and others not once.

Some could lift 1000 and some not 100 pounds. Observing what practice had done for the blacksmith, he developed his system of carefully measuring each student and arranging exercises calculated to develop him where he fell below the average man. He might be photographed, and in many ways an interest in his bodily condition was aroused. His developing appliances and their method had brought to pass that 245 men at Harvard now are stronger than was the strongest in 1880, and his apparatus is in 350 institutions in this country. A muscle contracts best if moderately loaded, hence free gymnastics is inferior to exercises with moderate weights. Every competitor in athletic sports at Harvard must first get his certificate. There must always be enough muscles called into action to stimulate heart and lungs and skin, and foils should follow. Germany, tired of the dull *Turnvereine*, now wants English sports ;Old and New England, tired of athletics run wild, want a rational system. France and Sweden see that light calisthenics give too little exercise. America wants a happy combination of all.

DR. H. D. WEY described the very beneficent and, best of all, lasting results of a five months course of systematic physical training on a class of 12 and later 164 criminal young men and boys in the Elmira Reformatory. Dr. S. S. Curry thought responsiveness to emotion, voice culture, breathing, flexibility of hips, adjustment of the axial line of the body, and using centre of gravity of the body and other somewhat Delsartisan things were liable to be impaired by other systems than that of Ling. And finally Dr. Hartwell closed the exercises by stating that we had as yet no American school, that we wanted a three or four storied experience, that our system was like a crazy quilt, and that nothing showed the capabilities of physical culture like the Elmira experiment, and that the Central Institute of Stockholm was the best in the world.

The thanks of the conference were extended to Mrs. Hemmenway and Miss Homans for inagurating the congress.

Physical and Industrial Training of Criminals, by H. D. WEY, M. D. Indust. Ed. Ass., N. Y., 1888, pp. 50.

The watchword of penology used to be retribution, now it is sequestration and reform. Criminals are usually dull though often smart and foxy. They lack self-control, stability and perseverance, and sympathy, are almost always lying and hypocritical, and perhaps chiefly cannot conform, compromise, subordinate their will to that of others. Dr. Wey selected a class of 12 in June 1886, averaging 22–9 years in age. They were put upon a special dietary with everything weighed and measured. Each was given three baths per week, and the body was spatted, pinched and rubbed, etc. Physical exercise was also regulated, including work with three-pound dumb-bells, and they were given special work in school. First they lost a little weight, but then gained. For a year or two they had made but little progress in conduct or intellect. Their shuffling gait improved, their faces began to brighten up, and the dull stolid look to disappear, cerebral activity increased, although with strange lapses, sometimes for several days, in the ox-like, animal mode. Their marks improved from 45 to 74 per cent. After six months, when the class disbanded and the old regimen was restored, the good results remained. Thus moral, physical and mental capacity were all increased by physical exercise and regimen. So in two succeeding classes the good results generally lasted, as is shown in curves and tables. Dr. Seguin, in his remarkable record of his work with idiots, showed that physical training was brain culture. The pamphlet closes with a plea for instructors of physical culture, and for a general as opposed to a special course in manual training by actual work in reformatory institutions.

Overpressure in the High Schools of Denmark, by DR. HERTEL, pp. 148, London, 1885.

Dr. Hertel's tests and questions were applied to children of the better classes of the schools of Copenhagen, in the autumn when children were fresh from vacations, and all doubtful cases were thrown out, instead of being set down as cases of ill health, so that his percentages may be called underrated. If disorders were slight they also were disregarded. He found about one third of all school boys suffering from one or more chronic complaints. In mixed schools 18 per cent. enter sickly, in the third year the number of sickly boys is doubled, and in the second classical year 41 per cent. are sickly. At about 12½ there is a sudden increase of illness due to the development of manhood. This period is preceded by a period of greater delicacy and susceptibility to bad influences. Kotelmann had shown that from 9 to 13 boys grew 9½ inches in height and increased in weight 44 pounds. The artificial conditions of school life are thought to be the cause of this invalidism. Although there are no state examinations in schools for girls, and there is greater freedom in all respects, 12 per cent. enter and 61 per cent. emerge from schools sickly. Before puberty scrofula in its many forms, and after it, anæmia, nervousness, headache, eye diseases. No account was taken of children suffering from more than one complaint. As attendance is enforced, comparisons with children who do not go to school cannot be made. The Danes must free themselves from this juvenile serfdom if they are to remain a vigorous and healthy race. In England, overpressure falls chiefly on clever children who are urged on to win scholarships. The stimulus of competition, the worry of examination, provoking children, whatever they are made or trained to be, to be something better and to think it a disgrace to die where they are born, Ruskin calls "the most entirely and directly diabolic of all the countless stupidities into which the British nation has of late been betrayed by its avarice and its irreligion." Some teachers are possessed by education as by a demon, and are so professionally nearsighted that they think their claim to the child first, and leave him no time to pursue *favorite* studies, so that well on into college the youth does not know his own interests or powers, and his pursuits are liable to be determined almost by chance. Bright boys are demoralized, made slow and empty-minded, lose interest in life, pass periods of listlessness and inactivity; and with girls who feel emulation and failure more keenly the curse is still worse. The highest functions of the brain are latest to develop and earliest to decay, and it is just these that are injured. The ignorance of teachers is appalling. Many reported their schools healthy and were indignant when examination showed one third to be sickly. They are the last to realize that without nine hours sleep and a hearty appetite children are not fit to be in school at all, that their very presence there impairs nutrition and growth, and gives neurotic habits that permanently arrest the development of their full powers. His description of home under the influence of a mother thus enfeebled is pathetic. Sanitary science is so crude that it will be hard to effect the decided reduction of school work between 13 and 15 as required even for girls. More exposure, less petting and society, coarser and plainer food, a health record book for each pupil often annoted by the family doctor, better gymnastics, etc., are desiderated. Dr. Pilger said that the youth of Germany have degenerated mentally, morally and physically to a great extent, and insists that after 18 only very exceptional boys should be permitted to attend school at all. The Danish government has since tested 30,000 children with results that fully confirm Dr. Hertel. The ignorance and stupidity, and the false, narrow, onesided training of the average teachers are invincible and are slowly undermining modern civilization.

The Growth of Children, H. P. BOWDITCH, M. D. Boston, 1877, in the Eighth Annual Report of Massachusetts Board of Health.

Dr. Bowditch, during 25 years, took annual measurements of 13 females and 12 males. The facts noted were: 1. Growth is most rapid during the earliest years of life. 2. During the first 12 years boys are one to two inches taller than girls of the same age. 3. At about 12 1-2 years girls begin to grow faster than boys, and, during the 14th year, are about one inch taller than boys of the same age. 4. At 14 1-2 the boys again become taller, girls having, at this period, very nearly completed their growth, while boys continue to grow rapidly till 19 years of age.

The investigations of Quetelet showed that, in Belgium, girls are at no period of their lives taller than boys of the same age. To explain this discrepancy and to investigate the influence of sex, race, climate, and the period of puberty upon the rate of growth, Dr. Bowditch undertook a systematic measurement of pupils in Boston schools. Twenty-four thousand and five hundred observations were made; weight being recorded at the nearest 1-4 pound, and height at the nearest 1-4 or 1-10 inches. It was assumed that the rate of growth may be ascertained by computing at any one time the average height and weight of children of various ages as well as by determining the average height and weight of a given set of children in successive years. Results: 1. Comparative rate of growth of the two sexes until the age of 11 or 12: boys are both taller and heavier than girls of the same age. At this period girls begin to grow very rapidly, and for the next two or three years surpass boys of the same age in both height and weight. Boys then acquire and retain a size superior to that of girls who have now nearly completed their full growth. This statement is based upon observations on several different races and in various conditions of life. If the requirements of mental effort should be reduced when the forces of the organism are engaged in producing rapid growth and development of the physique, the fact that these periods occur in different ages in the two sexes may be regarded as an argument against the coeducation of boys and girls, except during the earlier years of life, in which the rates of growth are practically the same. 2. Effect of race on size and on rate of growth: children of American born parents are, in this community, taller and heavier than children of foreign born parents, a superiority which seems to depend partly on the greater average comfort in which such children live and grow up, and partly upon differences of race or stock. 3. The relation of weight and height in growing children is such that at heights below 58 inches boys are heaver than girls in proportion to their stature. At heights above 58 inches the reverse is the case. In height and weight the Boston school boy is superior and to English (comparing Latin schools and Technical with English public schools and universities). Dr. Bowditch suggests the advantages of further investigation to determine: 1. The influence of geographical and climatic conditions on the size of growing children. 2. The number of generations necessary for the complete development of the influence of changed climatic conditions on the rate of growth of a given race. 3. The effect (if any exists) of the season of the year on the rate of growth. 4. The comparative effect of city and country life on the rate of growth. 5. The relation between disease and the rate of growth. 6. The effect of local hygienic conditions on the physique of growing children.

The Growth of Children, (a Supplementary investigation), H. P. BOWDITCH. Boston, 1879, reprint from 10th Annual Report Massachusetts Board of Health.

The statistics used were those referred to in the 8th Annual report of Massachusetts board of health. The observations for each nationality were tabulated according to the occupations of the parents. The sons of non-laboring American parents are at almost all ages taller and heavier than the sons of laboring parents of the same nationality. The same general fact is noted in girls, though here the difference is much less striking than in the case of boys. The superior size of the children of the non-laboring classes is also shown for the Irish nationality. In comparing American children with Irish children of the same social class, race seems to be of somewhat more importance than modes of life in determining the rate of growth. Yet the author concludes, after comparison with Roberts' statistics, and considering the difficulty of making class distinctions in America, that mode of life is at least as important a factor as race.

Why do we Measure Mankind? FRANCIS GATON, Lippincott's, February, 1890.

On the Anthropological Laboratory at the late International Health Exhibition, FRANCIS GALTON, Jour. Anthropological Institute, vol. 14 (1884) p. 205. *On Recent Designs for Anthropometric Instruments*, FRANCIS GALTON, Jour. Anthro. Int., vol. 16.

The chief object of these measurements is to define the individual or the race, and to show in what way, and to what extent, he or it differs from others. So far as the individual is concerned, measurements teach him to know his own powers at any given time. The second important object is to keep watch over the development during the period of growth, and to give timely warning if it does not proceed normally. Breathing capacity and muscular strength are important elements of success in active life; the rank one holds in these respects may be a guide as to whether his occupation should be active or sedentary. It is important to discover color-blindness early in life, as the choice of occupation is limited by this defect. The tests for eyesight give indications of trouble in time to prevent serious evil. Physical and mental measurements may afford a good moral lesson in awakening from self-conceit. They are especially valuable as a means of testing the effect of education. It should be a recognized part of school discipline to have such measurements regularly taken. The trouble of measurements is best repaid when it is directed upon the least variable faculties. The actions required by the tests should be as familiar as possible.

Cambridge Anthropometry, JOHN VENN, F. R. S., Jour. Anthropological Institute, Vol. 18, p. 140.

In 1885 Mr. Galton presented a set of instruments to Cambridge University. Mr. Venn makes his report upon the measurement of 1450 students. The tests employed were:—1, keenness of eyesight, the distance at which diamond type can be read using each eye separately; 2, strength of pull; 3, strength of squeeze, with dynamometer; 4, head measurements, length, width, and height above the ears; 5, breathing capacity; 6, height without shoes; 7, weight with clothing. The students were divided into three classes, A B C, according to University rank. The university men were superior in height, pull, squeeze, breathing and weight to the subjects measured at South Kensington. In height, weight, breathing capacity and squeeze there was no difference in the three classes of students. In eyesight and in strength of pull, class A was inferior to B, and B to C. In head measurements there was a decided superiority of A over B, and of B over C. There appeared to be a decided increase in head measurements after the age of 19 in the case of all students. I. F. REIGART.

An Anthropological Cabinet for Pedagogic Purposes. Prof. SERGI of the University of Rome, translated for Education, Sept. 1886.

The practical pedagogist ought to know that the child is in a certain state of physical and of mental development, and that between these two facts there is a correlation constant in kind but varying in detail; that there may be arrest or retardation of mental development depending on arrest or retardation of development in the organs concerned:—that emotional sensibility is related to physical sensibility; between them there may be symmetry of development or disproportion; . . that intelligence has a value relative to knowledge, that knowledge should not be permitted to suffocate the mental development. In order that a child may be educated, the educator must understand the mode in which his psychical phenomena manifest themselves, and the particular indications that accompany them. Scientific experience gained by Anthropometric and Psychological methods must be the basis for scientific pedagogy. Each child should have a chart upon which a record should be made on entering and leaving school each year.

BIOGRAPHICAL CHART.

ON ENTERING SCHOOL.	ON LEAVING SCHOOL.	ON ENTERING SCHOOL.	ON LEAVING SCHOOL.
Name,		Time of Perceptions,	"
Age,		" Reflex Movements,	"
Native Country,		Intelligence, Backward,	"
Paternity,		Precocious,	"
Age of Parents,		Emotional Sensibility,	"
Vaccination,		Character at home,	"
Stature,	do.	among friends,	"
Weight,	"	in school,	"
Measure of Head,	"	Eccentricity,	"
" " Face,	"	Anomalies,	"
Color of Hair,	"	Deformities,	"
" Skin,	"	State of General Health,	"
" Eyes,	"	Any other indications,	"
State of Vision,	"	Errors,	"
" Hearing,	"	Conduct in school,	"
" Touch,	"	Penalties, Efficacy,	
" General Sensibility,	"	Rewards,	
" Sensibility to Pain,	"		

I. F. R.

Mental Association investigated by Experiment. CATTELL AND BRYANT. Mind, Vol. 14, (1889), p. 230.

The paper is a report upon the investigations of a number of teachers in England, Germany and America. The subjects were specialists, teachers, university students, Bryn Mawr, English and Irish school girls. Two methods were employed: 1. Lists of ten words were given: the observer, seeing the words in order, said what each of them suggested; the kind of association is varied by using lists of concrete or abstract nouns, verbs, etc. From the total time the average for each word is calculated. 2. The subject upon hearing a word pronounced, writes the suggested words for 20 seconds. This method has the advantage that it can be used with a number of persons simultaneously, though time is lost in writing. The time of these experiments includes the time to perceive the word and to say or write it; but in comparing the time required by different persons the whole interval may be used. In using the lists of ten words the average time for each word was, for students of university, 2.11 sec., for concrete nouns, 2.42; for abstract;—Bryn Mawr girls, 3.14 : 4.1; gymnasium students, 4.46 : 7.07. In English schools the average number of associations in 20 sec. was house 4.7, tree 4.6, ship 4.8, chair 4, child 3.7, time 3.9, art 3.1, love 2.4, virtue 2.3. There was an increase of rapidity in the higher grades, and a lessening of the relative time for abstract nouns. The nature of the associations varies according to occupation or school training. Logical and verbal associations were favored by those subjects who teach and write. I. F. R.

The Children: How to Study Them. FRANCIS WARNER, M. D. London, 1887, pp. 80.

The study of children is important for teachers, yet many study only their faculty of producing lesson work. The facts to be observed are physical ; we cannot directly observe the child's mind. Movements are the only direct signs of brain action, and the best indications of its condition. The development, nutrition, postures and movements of the child should be studied. Signs of fatigue should be noticed in time to prevent exhaustion. One series of movements long continued means long continued action of one portion of the brain; change the action of the child, and thereby change the portion of brain acting ; thus fatigue and exhaustion may be avoided. Different positions of the brain and head indicate strength, weakness, nervousness, etc. Knowledge as to the physical condition of children is necessary to distinguish those slightly defective from those merely stupid and lazy, who ought to be made to work and not exempted from punishment. The defective, feeble, wrong-headed children should not be neglected. They should be kept at school and receive much training that they may not drift into pauperism and criminality. Every weakly or troublesome child who now escapes from public education is a failure in the system, and is likely to be a public loss.

A larger work by the same author, *The Growth and Means of Training the Mental Faculty*, MACMILLAN, 1890, pp. 222, contains the above mentioned chapters on the study of children, with the addition of several chapters on the analogy between the development of the child and plants, and a chapter on School Reports. I. F. R.

Experiments in testing the character of school children. MRS. SOPHIE BRYANT, D. Sc. Journal of Anthropological Institute, XV, p. 338.

The tests were made at the suggestion of Mr. Francis Galton. A number of children, all aged thirteen (the number and sex not stated), were allowed to remain for about ten minutes in a room which they did not know, and were then required to write a description of it. The room described was a school room having a sufficient amount of ornament in pictures and otherwise to redeem it from being quite prosaic. Mrs. Bryant did not know the children personally, and had no preconceived idea as to the character of the points to be revealed.

The points noted were: 1. Distinctness of impression and accuracy of apprehension. There was great variety in the ratio of these two factors of perception to one another; the false perceivers were nearly always ready apprehenders, who inferred carelessly, and projected their false inferences into false perceptions. 2. The order of perceptions, and the general notion of order. Of twenty observers, eight gave evidence of no interest in order. The order usually chosen was that of place. 3. Differences in color interest. Some took pains to describe colors fully, others took no notice of color. 4. Tendency to substitute feeling for thinking, as in the use of the adjectives lovely, sweet. In a second series of experiments, the imagination was tested by the description of a picture.

Mrs. Bryant's article is supplemented by specimen papers and tables illustrating her method of noting results. I. F. R.

Mental Imagery, FRANCIS GALTON, Inquiries into Human Faculty, p. 83.

This chapter is based mainly upon replies to a series of questions concerning the vividness, definition, coloring, extent, etc., of visual images, e. g., those of a breakfast table. Great differences are noticed in the power of visualizing, from an entire lack of mental images to perfectly clear and distinct pictures. Some persons mentally read off scores when playing the piano, or manuscript when making speeches; a few see mentally in print every word that is uttered. Sharp sight is not always accompanied by clear visual memory. Images do not become sharper by dwelling upon them. The place where the image appears to be differs much. Some have the power of projecting a mental picture upon paper, and outlining it with a pencil. The power of visualizing is higher in the female sex than in the male; it is dulled by abstract thinking; it is usually feeble in scientific men. The faculty is a natural gift, but admits of being developed by education. Artists, architects, physicists are greatly helped by it. It is of importance in every handicraft and profession where design is required. The best workmen are those who visualize the whole of what they propose to do, before they take a tool in in their hands. The power to recall beautiful scenery and works of art is a source of the highest pleasure.

A faculty that is of importance in all technical and artistic occupations, that gives accuracy to our perceptions and justness to our generalizations should not be weakened by disuse, but judiciously cultivated. The serious study of the best methods of developing and utilizing this faculty, without prejudice to the practice of abstract thought, is one of the pressing desiderata in the science of education. I. F. R.

Eye-Mindedness and Ear-Mindedness. JOS. JASTROW, Popular Science Monthly, vol. 33 (1888), p. 597.

Jastrow suggests a number of tests to determine whether one is inclined to think in visual or auditory images. 1. The maximum number of nonsense syllables, numbers, or the like, that can be repeated after a single reading, compared with the number remembered after a single hearing. 2. The reading of a passage compared with hearing it read. The number of repetitions necessary to connect a passage. 4. Use the same means as the former tests, but continue them longer; error is sure to occur; note the amount and nature of the errors. 5. Two passages of equal difficulty, or two lists of syllables, numerals or words, are chosen. One is read by the subject, the other is read aloud to him. 6. Find the limit of what can be learned by the eye and the ear simultaneously.

A Study in Mental Statistics. JOSEPH JASTROW.

The subjects were a class in psychology at the University of Wisconsin, 25 men and 25 women. The test was writing, as rapidly as possible, 100 words suggested by a word given. The objects were to test (1) the similarity of our ideas and habits of thought; (2) the links that bind our ideas together; (3) the time required for these processes. 1. Of the 5,000 words written only 2,024 were different; 1,266 occurred but once; 3,000 of the words were a repetition of 758. The habit is to write first the most common, then the more unusual words. The women used 1,123 different words, the men 1,376. 2. The most common classes of words were names of animals, articles of dress, proper names, actions, implements and utensils. Under articles of dress the women wrote 224 words, the men 129; articles of food, women 179, men 53. The men preferred implements and utensils, names of animals, professions, abstract terms. 3. The time required for writing the 100 words was, on an average, 308 seconds. I. F. R.

Remarks on Replies by Teachers to Questions Respecting Mental Fatigue. FRANCIS GALTON, Jour. Anthro. Institute, 1888, p. 157.

Mr. Galton says that there ought to be no room for doubt as to whether the pupils in a particular school or class, and at a particular time, were or were not over fatigued. The object of this investigation was to determine the signs and effects of incipient fatigue in as measurable a form as possible. The replies of the teachers to the inquiries concerning the signs of mental fatigue were classified as they referred to; 1, The general aspect of wearied children; 2, nervous irregularities as manifest in restlessness and muscular twitching; 3, headaches; 4, irritability of disposition; 5, reaction time, as tested by taking hands and sending an impulse around the class; 6, the senses, dulled or supersensitive; 7, failure of memory; 8, difficulty in easy arithmetical problems; 9, failure of mental grasp, and thought wandering.

Mr. Galton suggests four practical tests for incipient fatigue; 1, the length of time during which neatness of execution can be sustained in performing a prolonged task; 2, promptness and sureness of memory in simple things; 3, the solution of common sense arithmetical problems; 4, reaction time.

Many of the teachers who replied to Mr. Galton's questions said that over-work was impossible in their schools. Twenty-three teachers out of 116 correspondents had broken down, 21 had never wholly recovered. The conclusions drawn by the author were: 1. The reason mental fatigue leaves effects so much more serious than bodily fatigue is due to worry. 2. Break-downs usually occur amongst those who work by themselves; over-zealous pupils are rare; most danger is during preparation for teaching or other professions.

It can scarcely be claimed that this investigation or the more extended investigations of Dr. Warren have determined accurate tests of the signs and effects of fatigue, aside from the difficulty of measuring the degree of mental fatigue; since all mental work results in fatigue, there lies the problem of determining at what point the fatigue becomes injurious. Restlessness, inattention, etc., are not always due to overwork; an uninteresting teacher, as Mr. Fitch says, will have no trouble in discovering in his class all the signs of weariness.

On the Principle and Methods of Assigning Marks for Bodily Efficiency. FRANCIS GALTON, Nature, Oct. 3, 1889.

At Eton college the attempt was made to determine whether it is possible to frame a system of marking for physical measurements to be as accurate as the assigning of marks upon a literary examination. The students were required to write essays to which marks were given by two examiners, each ignorant of the marks given by the other. They were also subjected to a physical examination by two physicians, under similar conditions. Marks were assigned for 1, breathing capacity; 2, hearing; 3, eye-sight; 4, strength measured by grip dynomometer; 5, endurance, determined by the number of seconds the needle of the dynomometer could be held within 10° of the maximum strength; 6, relation of height to weight; 7, girth and shape of chest; 8, general muscular development; 9, health record; 10, general aspect and condition.

Though half of the marks given were determined by the judgment of the examiners, as it was impossible to make definite measurements for all the tests, there was a closer agreement in the marks assigned to each boy by the physical examiners than in those assigned by the literary examiners. The average difference in the marks given by the two examiners was 16.7% in the literary examination, and 9.5% in the physical tests. I. F. R.

Ueber Schulwanderungen. Von O. LOMBERG in ELBERFELD. Langensalza, 1887.

The genial Bartholomäi before his death, and since Scheller in 1879, and later Beyer have written upon school-excursions. Like Antæus, modern youth are strengthened by close and prolonged contact with mother earth. Close knowledge of our wider home should be the basis of all knowledge. Studies of the contents of childrens' minds show tables and percentages of ignorance that are appalling. Nothing so well cures these gaps in knowledge as excursions. Modern geography-teaching begins with the school-house, widens to the street, town, state or province in concentric circles. The earlier pages of text-books in Germany differ with every town and flow into coincidence sooner or later, inversely as the distance between the cities where they as it were strike,root. Ideas of water-sheds, plateau, river system, pass, cliff cape, mouth, spring, canal and scores of others can many of them be demonstrated on a small, if not on a large scale in brief excursions, if the resources of the environment for this purpose are very carefully studied out beforehand. Natural history, so often dry and dogmatic, is invested at once with the greatest interest by carefully wrought out little itineraries. Rural wells and pumps, wedges, water pipes and courses, levers, echoes, refraction, cloud colors, coal pits, lightning conductors, etc., aid physics; salt, agriculture, cooking, drug stores, factories, stones and minerals, mines, etc., are rich in keys and impulses to chemistry and mineralogy. Language is clearer and more exact in nature's grand laboratories. Songs may be sung on the walks that will seem fuller of poetic spirit and patriotism. P. Gerhardt's summer song inspires the love and the mood of nature. Essay writing is made easy and concrete by material thus gathered. Botany, surveying, landscape gardening, geometrical form, arithmetic, discipline,—everything can be taught in rudimentary forms that will make later study more meaty and less abstract, to say nothing of health. Teaching and walking go together. The pedagogic resources of every locality for each branch of study should be wrought out slowly but thoroughly by teachers in their meetings and privately, and formulated in peripatetic curricula. Everywhere where this is attempted there will be surprise at the richness of material. Decaying folk-songs and custom should be awakened. Out of the stuffy school-house then into God's free world, back to nature again! Even a little rain, cold, heat, dust, fatigue should not deter. Father-lands have objects, etc., scenery, which need but be known to be loved, but must be known long, and minutely. How then can a purely city-bred youth be patriotic? Flowers, trees, sun-sets, forest-shades, hills, monuments, architecture, railroads, vineyards, birds, bees, museums, make boys more sharply truthful and give a keener sense of beauty.

NOTES AND DIGESTS.

NOTES ON STUDIES OF THE LANGUAGE OF CHILDREN.

A new pulse of family interest accompanies a child's first efforts at speech,—and naturally so, for he then becomes more genuinely human than before in entering upon a characteristically human accomplishment. This family interest and the desire that the child should speak early and be facile of tongue is reflected in folk-lore. (Vide Ploss; *Das Kind*, II, 206, 286). Children that do not yet speak must not, in Prussia, kiss each other, because they will be slow in learning to speak; in Bohemia the nursing child and his mother must not eat fish or the child will long be as dumb as a fish; a German baby will stutter if the soles of its feet are tickled, and an Italian baby, if he is not given a drink out of a bell when first weaned.

Not less than this pre-scientific family interest is the interest of psychology, physiology, philology, and pedagogy. How does mind begin? How does the complicated brain, nerve and muscle apparatus of speech come into adjustment? How does the physical mechanism influence the growth of language in general, and how did language begin? How is the child able to learn in its first three years such an enormous amount? These difficult problems and others wait upon the study of child-language for a partial solution at least. Careful and adequate observation has for the most part been made by scientific men upon their own children, and that mostly within the last 15 years. From the enlistment of trained women as observers, and the utilization of asylum children much is yet to be hoped. By far the most important of the studies thus far, both in exactness and extent, is that of Preyer in his *Die Seele des Kindes*.[1]

By way of introduction to his observations upon his child, the author traces a close parallel between the defects of language resulting from brain disease in adults and the similar defects from as yet imperfect brain development in the child. Such a parallel, at least in its larger aspects, is both true and instructive.

In its broad outlines the progress of the child in his mastery of his mother tongue may be briefly sketched. It is a resultant of the condition of his speech mechanism, cerebral and muscular, of his intellectual development, and of what he hears from his parents. The baby's first screams are reflex and of no more language value than the closure of its hand upon a pencil put into it, or the cries of new born animals. Very early the crying is different according to the different kind of discomfort experienced. Later comes the babbling stage in which sounds are produced simply as so much exercise of the vocal muscles, pleasantly associated with auditory sensations. These begin with the vowels and easier consonants and progress by degrees to the more difficult ones, though this rule is not absolute, as Preyer shows. At this time the baby probably pronounces in play many or all of the sounds that he will later use in speaking and others besides, e. g., a German child uses the English *th*. He cannot, however, repeat even the easiest sounds after another person, and has to re-learn many of them with difficulty, when he later actually learns to speak. At this time he shows understanding of certain words by his actions when they are spoken to him, and still earlier has well understood, and even made use of, speech music and inflection as signs of emotion, and the language of gesture. By degrees from this babbled stream of syllables are selected by the child certain easy ones in imitation and as it were by tacit convention with his parents and nurses, to serve as the signs of things, especially of food and the persons most seen. These first words are of wide generality, *papa* being applied to all men and *mama* to all women; and only by degrees are these narrowed down to mean the parents. At the same time imitative speech appears; the child tries to imitate not only the speech of its parents, hitting particularly the last syllables, but also the cries of animals and the sound of steam whistles and the like. In this way it secures a number of onomatopoetic words. The first parts of speech are nouns, verbs in the infinitive and imperative, and adjectives; pronouns, adverbs and prepositions are later. It would be difficult, however, to specify in some cases what parts of speech the first words really are, for they stand for whole phrases or sentences. From these stages the child progresses very rapidly during the second and the third year to a command of language, that makes full study extremely difficult. For the detail of these stages and for a guide as to what to look for in new observations on child language the reader can be referred to no better work than this of Preyer's.

---

[1] The translation of this work is from the second German edition. A third German edition has recently appeared, in which a number of changes by way of omission and addition are made. A chronological view of the more important signs of development has been added; also an index. The appendices and many new items have been embodied in the text, and the section on diseases of language has been brought up to date. The general plan of the work, however, remains unchanged.

This author answers with an emphatic affirmative, the question, whether or not thought is possible without words; but words once acquired furnish an important stimulus to further thought.

In an appendix entitled "Comparative Observations Concerning the Acquirement of Speech by German and Foreign Children," Preyer summarizes with comment most of the literature on the subject at that time (1884) accessible,(Sigismund, Löbisch, Taine, Wyma, Strümpell, Darwin, Vierordt, Schultze, Lindner, Haldemann, Holden, Humphreys, and others), and adds besides unpublished observations that have been communicated to him by others. The English reader may be referred to these summaries in the translation.

The chapter on Expression and Language in Perez's *First Three Years of Childhood*, contains some observations of the author, but less methodical, and, in comparison with Preyer's, merely casual. He brings out, however, in the general treatment that he accords the subject many interesting suggestions.

The papers of Taine and Darwin in the volume of *Mind* for 1877 were followed in the same periodical by those of Pollock (vol. III, 392) and Champney's (vol. VI, 104); the first, a rather full account of the speech of a child from its twelfth to its twenty-third month; the second, a very brief note upon a younger child. In the English Illustrated Magazine for 1884, under the title of "Baby Linguistics," Sully gives an entertaining account of the speech experiences of a young friend of his, from observations by the child's father. The account is fullest for the period between the sixteenth and twenty-fourth month.

Besides the studies so far mentioned, which deal chiefly with the child's ability to pronounce, use and understand words, a few others have been made with a view to getting at the number of words which a child at a given age has independently at command. Of this class are the observations of Holden, (*Transactions of the American Philological Association*, 1877, pp. 58-68) and of Humphrey's (*Ibid*, 1880, xi, pp. 6-17). Holden fixed his own vocabulary after a careful estimate, at from 33,000 to 34,000 words, and that of an average grown person at 25,000. From very careful observations (made by himself in two cases and by a friend in a third case), excluding all doubtful words, and all not spontaneously used, the vocabularies of three children numbered 483, 399, 173, respectively. The order of parts of speech being: nouns, verbs, adjectives, adverbs, other parts of speech, the last group exceeding the adverbs in two cases. The first two of these were girls. A son of Holden's, not included above, used at 24 months, as the author informed Preyer, about 397 words. Holden is convinced that difficulty of pronunciation rather than difficulty of comprehension is the important factor in determining whether a given word will appear in a child's vocabulary. The number of words understood by the first child, over and above the 483 used, is estimated at 1000.

Humphrey's little girl had a vocabulary of 1121 words. The order of frequency was as above as far as the adverbs; then followed: pronouns, prepositions, interjections and conjunctions. The child seems to have been precocious in imitating speech and early to have made some progress in naming things; at a later period, however, she learned slowly and with evident effort. The author gives considerable attention to the changes suffered by the words that the child found difficult to pronounce.

A number of vocabularies used by children from the fifteenth month to the fifth year have been collected by J. M. Greenwood, and are printed in his *Report as Supt. of the Kansas City Public Schools for the year* 1887-88, p. 52-65. The only vocabulary in which pronunciation is indicated is the first, containing 80 words used in her 17th month by a little girl. Another little girl at 15 months used 60 words; at two years she used 500. A third little girl at two years and a half used 1050; but this includes such words as "must" and "mustn't," "sing" and "sang," etc., as separate words. A boy at three years and five months used in one month 837 words; in two weeks at three years and nine months he used 172 *new* words. The oldest child reported upon was a boy of five years. His vocabulary, as taken down by his mother in two weeks, was of considerably over 1600 words, but this includes some repetitions. All the lists include proper names in greater or less number. How much care was exercised in taking them down and how accurate were the observers cannot be inferred from the brief notes appended by the collector. One or two of the lists in themselves suggest less than sufficient exactness. Two baby vocabularies have been placed in the hands of the writer of this note by his friends. One is a list of 185 words, including 13 proper names, used voluntarily and with understanding by a little girl of 21 months; the other a partial list rapidly taken down from the conversation of another little girl of about the same age. This second list contains over 400 words and is known to fall very far short of the number in use at the time. The size of the vocabulary at a given age will of course vary considerably from child to child; and its composition, after the stock words of the nursery and household, will often show, by a strange word or two, as Preyer notes, the business of the father or the peculiarities of the child's own experience.

With these vocabulary studies may be mentioned that of Dr. H. K. Wolfe on "The Color Vocabulary of Children," (*University Studies*, published by the University of Neb., Vol. I, No. 3, July 1890), though the age of the children examined is greater—from 5 to 17 years and over. The author finds the conditions that fix the extent and accuracy of the vocabulary corresponding to any special sense "in the delicacy of the discriminative power and the need for expressing small degrees of difference." Preyers's child at 20 months knew no color names; at 25 months he had been taught to name red and green correctly when only those two were shown; at 34 months he named yellow, brown, red, violet and black with considerable certainty, but green and blue with relatively little, a result which Wolfe thinks due in a measure to the order in which the child was taught the colors. In two of the three vocabularies given by Holden no color words occur; in the third only black and white.[1]

Dr. Wolfe's own observations were made in the course of an examination of the color sense of the public school children in Lincoln, Neb., in which schools there is practically no training in matters of color whatever. Small cards painted in the colors to be tested were shown singly to the children with the question: What color is that? The answers received were noted down and later treated statistically. The answers of children with defective color vision are of course kept separate. The author's full tables show among other things the following: white, black and red are generally correctly named, then follow blue, yellow, green, pink, orange and violet. Girls at 8 years old name the colors about as well as boys of 16. Of other colors tried brown was readily named; drab, gray, purple, lilac, crimson and scarlet poorly. It is surprising that any children not defective in color vision should make mistakes in naming black and white, and should give for such a color as yellow the names green, blue and pink which are typical of the errors to be found in the tables. This the author explains as follows: "The fault does not lie in the ability to discriminate present sensations. It exists rather in the process of association. The bond of association between sensation and name is so weak that the former fails to call up the latter. Hence also the false name fails to recall *its* corresponding sensation; thus the only opportunity for correction is wanting."

The children with defective color vision made more errors of course than the rest, but on the other hand they succeeded well enough to emphasize the caution insisted upon by those that have before tested for color-blindness, namely, that no test is reliable in which colors are to be named instead of matched. For much that cannot well be summarized here, both of detail and of incidental interest to pedagogy and psychology, the original must be consulted. It is almost certain that a census of the adult public would show results not very unlike those for the older children; which indeed would only prove yet more clearly the need of some color training in the schools. If exact discrimination and classification are as important a characteristic of the trained mind as they are assumed to be, it would seem that a notable opportunity for practice in this direction has been allowed to go to waste.

E. C. SANFORD.

Die Stipendien und Stiftungen, Convicte, Freitische, Etc., an allen Universitäten des deutschen Reichs. DR. MAX BAUMGART. Berlin, 1885, pp. 760.

Each scholarship, fellowship, stipend, free table, provision for remission of fees, with the statutes enacted for the more important ones, and conditions for applying for them are brought together here for the first time, and constitute very curious and interesting reading. Thousands of students are benefitted by them each year, and are more and more influenced in their choice of an university by these. After once acquiring academic citizenship the first care of many students is to study the conditions of receiving these benefices, not a few of which are competitive. This book is therefore in part intended for the libraries of gymnasia and real schools. Having received a particular stipend the student is advised to study its statute and the will of its founder, and to work himself so far as possible into the spirit and purpose of the founder, and each appointment should have this chiefly in view. A book like this is studied with growing awe. These many funds, large and small, very recent and centuries old, are products of piety, patriotism and philanthropy. The donors were impressed with the immortality of human society, and realized that higher education was its best safeguard, and that the poorest should have equal rights with the richest in the republicanism of culture. Not only parents who encourage commonplace sons to seek these appointments; but students who, having received them, do not feel sacredly quickened by the spirit of the ancient donors to whose memory this book is dedicated, to put forth all their powers to make their own lives felt in a remote future, are wanting in reverence for one of the noblest traits and acts of man. By the careful chronicler of the German universities the individuality of each fund has been sacredly maintained, and they have not, as has sometimes occurred in this country and in England, been fused together for more convenient administration to the effacement of the personality of more ancient donors. In France the state wishes to occupy this position of beneficence to students, and in voting individual aid to the more advanced among them which it does very generously, it permits no rivalry in this sacred function by individuals.

---

[1] An examination of the vocabularies given by Greenwood and the two in my possession shows considerable difference in children in this matter. Greenwood's, on a hasty reading over, gives results as follows (indicating the children by their ages:) 17 months, 0; 24 months, blue, red, white, black, (the same child at 15 months in a vocabulary of 60 words had none for color); 30 months, black, blue, brown, green, pink, red, white; 3 years and 5 months, red, black, blue, white, green, yellow; 5 years, red, blue, white, green, yellow, black. In the first of the vocabularies which I have in my possession there is no color word; in the second only white.

To get a general view of these funds we have tabulated all of those at Leipzic and Berlin. In Leipzic the smallest capital fund is about 37 dollars, while the largest exceed 20,000 dollars each. The oldest was established in 1325 by Duke Frederick, while nearly as many new ones were created between 1880 and 1885, when the survey ends, as in any entire decade before. Between 1550 and 1800 about one new fund, benefiting on a average nearly two students, was established each year. The last quarter of the last half century, and the decade 1860–70 were exceptionally prolific. Of all the Leipzic founders 182 gave precedence to students from some particular place, 173 preferred those of some family, mostly their own, 83 preferred those fitted at a particular school, and 74 preferred students of theology. Most recent founders who express a preference give it to science, while a few decades ago philology was often favored. Of the beneficiaries 278 are family, 269 place, 127 theology, and 115 fitting school, etc., some specifying one and some two or more of these conditions. The average amount to each student is about 26 dollars, but each may be benefited by several of the nearly 400 funds which may be distributed among 789 beneficiaries.

The University of Berlin is noted not only for the number but for the variety of its stipends. Some are founded by venerable professors without family who wish their savings to revert to their own university home, or department, or to encourage some aspect or phase of it. One large fund was thus bestowed by a bank which had won a still larger sum in a lottery. Some were voted to the university by townships, the income to be applied to students from that town; some by pupils of a distinguished professor to perpetuate his name; some by churches; others by charitable societies, chambers of commerce, free mason lodges, etc. Most, however, are by individuals of moderate means. Some are for sons of the nobility only, some for Jews only, some for professors' sons, some for inmates of orphan asylums and other special institutions, some for best scholars in a particular preparatory branch, some for artists' sons or artisans' sons, many for poor students. These funds are awarded by local mayors, heads of high schools, school boards, clergymen, churches, banks, boards of aldermen, parish committeemen, judges, etc., in the locality where the donor lived, or often by his oldest living descendant or member of his family. They are often assigned at the university itself by the faculty as a body or by individual professors of the subject, by church consistory, or bishop, by the rector, academic senate, by the minister of education, etc. Most appointments are made for one year at a time, but some are for two, three or even four years. The income of some alternates between expenditure and addition to the principal or between student and hospitals, artists, paupers, normal schools, etc. All these conditions made by even the most ancient founders are not only faithfully chronicled but piously conformed to and the name of every donor sacredly cherished. These funds are variously invested and, as we infer from the somewhat exceptional cases where principal and interest are both given, the rate is rarely more than four per cent.

In the business account of the Leipzic funds by the university secretary,[1] a list of free-table funds, 132 royal and 156 private, is given. About 160 students now avail themselves of the tables of the convictorium, while nearly one hundred students dine at the *Stadt Berlin* and the *Hotel de Pologne* on these funds. The royal wood stipend was transformed into a money equivalent in 1881, and now yields 10 marks each to 169 students. Free rooms are provided for 21 students, and an hospital fund provides free beds, care and treatment for the sick. In 1884, 863 students consulted at university expense the three university doctors. At the king's golden wedding in 1873, the so-called golden stipend fund of over 32,000 dollars for poor students who entered the university with the best marks in morals and scholarship, was established. It should be added that not a few of the larger funds have a brief set of royal statutes regulating their use. To some elaborate conditions are affixed, such as reports, dissertations. Stipends are also set apart for the university seminaries, which are often advantageous pecuniarily to students. Payments are usually monthly.

Grundsätze und Bedingungen der Ertheilung der Doctorwürde, etc. VON DR. MAX BAUMGART. Berlin, 1888, pp. 328.

This handy compilation contains the official requirements for the doctor's degree at all German and Swiss universities, including those at Vienna, Prag, Czernowitz, Gratz, Innsbruck, Dorpat, the academy at Münster and the Lyceum Hosianum at Braunsberg. The 22 German institutions contain 24 theological, 20 legal and medical each, and 21 philosophical faculties, making 85 in all. Tübingen has only seven, catholic and protestant theology, law, medicine, philosophy, political science, and natural science; Strasburg has (since 1873) a mathematical-natural science faculty; and Münich has a political science faculty; while Bonn and Breslau have both catholic and protestant theology; the academy at Münster has a catholic theological and a philosophical faculty only, and the other 15 universities have four faculties each. In Münich the philosophical faculty is one, yet is subdivided into two sections, a philosophical-philological-historical, and a mathematical-natural science section, each with its dean. The same is true in Würzburg since 1875, only one dean for both is chosen alternately from each section. In Bonn, the philosophical faculty has one dean but four divisions, each with its chairman, as follows: philosophy, philology, history and politics, mathematics, and natural science. In Leipzic the philosophic faculty has three sections: philology, history and philosophy, and mathematics and natural science. Here the sections aid each other in opinions about dissertations, etc. Mohl urged that the number of faculties should represent the scope of the universities' scientific work. The matter of the division of the philosophic faculty affects not only promotion to degrees, but the classical question, as in Hoffmann's well known address. In some universities the requirements are not codified. Each of the German Swiss universities has its own regulations, while Dorpat has the same regulation for all faculties save medicine, which has its own. In 1858 the University of Berlin strove to regulate degrees in all universities on uniform principles. Military requirements were imposed on all German Austrian universities by the government in 1872. In 1876 Mommsen wrote an article on the pseudo-doctors in Germany, condemning promotion *in absentia*, with many opinions from leading professors on reforms in conferring this degree. Bluntschli and Heinze opposed dissertations and would base the degree on a public oral examination. Most objected to Mommsen's plan of uniformatizing these requirements in Prussia. The minister of education, von Falke, forbad the dropping of oral examinations and an uniformitization of standards, at least with non-Prussian universities, lest all above the required minima be neglected. Of the four faculties the fee for doctor's degree averages a trifle highest in law, then comes medicine and next theology. The difference is very slight, and these averages are accidental results. The lowest and the highest fees are in theology, viz., 150 and 600 marks. The average in these three departments is nearer 400 than 300 marks. Doctors' fees in the philosophical faculty are distinctly lower. In this country the fee for the doctor's degree is but 10 dollars in five of our largest universities, and we can find no case where it exceeds 35. In England the degree of doctor of philosophy is only given in Victoria University, where it costs 10 pounds, M. A. being 12 pounds in Oxford and Cambridge. In the Swiss universities the fee is but slightly lower than in Germany. In Austria it is 30 florins in all save Vienna. In German universities from 40 to 280 copies of the thesis must also be presented by the candidate to the university. Many give three or even four *notæ* or merit marks, from *summa cum laude* to *rite* or *sustinuit*. Some minutely schedule off all majors and minors possible (Dorpat perhaps with most detail), and others prearrange with each individual the scope of his examination. Often it is required that on each thesis shall be printed, "Approved as a thesis for the degree of Ph. D. by———" the head of the department. The *curriculum vitæ* is still required; the disputation is falling into disuse. The preliminary examination or *tentamen* may be only a few days, or is often a few months, before the final or *rigorosum*. The minimum length of the dissertation is sometimes fixed at, e. g., two forms, which is a common requirement, each form in Germany costing about 10 dollars. Each faculty has its Latin sponsion, to which the student makes brief reply, as well as often an introductory formula or proemium. He must still often take an oath that he wrote his dissertation without help, and sometimes a unanimous vote that it is an addition to his science is required. Sometimes he must furnish the faculty with a large number of copies of his diploma, and in theology he often receives a Bible and ring. Sometimes a professional oath is required. After all examinations and theses the act of promotion may be postponed months and even years. The academic triennium is nearly always required, and in medicine four years is now often the minimum for Germans.

---

[1] Verzeichniss der Stipendien und Beneficien, etc., 1885, p. 136.

Interesting special cases are the following: At Strassburg whoever obtains the prize of the Max Müller foundation for a thesis requires no further test for it as a doctor's dissertation. At Bonn an A. M. degree may be given on very severe conditions, viz., the triennium failure excludes from a second attempt for two years; a detailed record of each examination is kept; the examiners are numerous, and besides the specialty, must question on philosophy, mathematics and natural science. This degree is intended to attest capacity to enter at once upon the work of an academic instructor. If the candidate selects his opponents, one must be a member of the faculty; but if they are appointed, any third year student who receives a stipend, a repetent, and a docent, may serve, one on each thesis, which must be taken up in that order. Finally any person present may respond. The doctor's degree however carries that of master of arts with it and is more special, while the disputation of a doctor can in no case be based on his thesis. The doctor's oath in Bonn must be taken with his hand on the crossed sceptres of the two beadles. Both these degrees are occasionally honorary, but only for actual and distinguished services in the department which confers them. Preliminary examinations are often required of all in languages and philosophy, or these are included as a third obligatory minor subject in the oral examination, or a classical examination is required if the dissertation is not written in Latin. The latter is indispensable unless a previously printed work of the candidate is accepted.

Die Reform (*der Doktorpromotion.*) Statistische Beiträge von Dr. Max Oberbreyer, Eisenach p. 155.

This is chiefly a collection of all articles of importance in chronological order, published in newspapers and journals upon the question of conferring doctor's degrees at a time when the subject was exciting great attention in Germany. The University of Berlin undertook to uniformatize the requirements for these degrees in 1858 in order to thus oppose their growing deterioration; its plans laid chief stress upon oral examination, printed dissertations and public disputation. Most Universities approved this plan, but some did not, and a few refused to communicate their own rules on the subject. Views were so diverse that even the plan of a congress of delegates from Universities was abandoned, and Berlin ceased her efforts. Since then, and directly due to this agitation, many Universities have reformed their conditions, but a few cling even to the *promotion in absentia*, the worst abuse of all. Th. Mommsen's article on the German Pseudo-doctors in 1876, which started the prolonged discussion, was called out by a plagiarized thesis accepted by the Rostock Faculty, and stirred up a hornet's nest. Letters from most of the smaller Universities protested that they did none of this "American" business. The public remonstrated, Rostock six days later did away with *absentia* degrees for ever, and Göttingen followed, but Jena refused. Caricatures of the various processes involved in obtaining and in conferring degrees at the "doctor factories" abounded, till at length Mommsen published his admirable article on promotion-reform. The conference here proposed was to ignore all degrees not conferred upon the conditions it should determine, and sought equal fees and methods in all faculties, and even uniform style of publication for theses, each with its number in course, and all brought into one market, with one index. They would then cease to be the plague of every book-dealer, librarian and specialist. In the legal and philosophical faculty, where entrance to active life is not absolutely conditioned on the doctor's degree, conditions should be more severe. Publication of the thesis now takes the place of the old verbal tournament, and should be imperative and the name of the professor who recommends it as suitable for a thesis should be printed on it. This is in fact the test of universities; the good insist on it, the bad neglect it. Theses should not be merely printed, but circulated among the best judges, and given all convenient publicity. Each thesis must actually advance the subject to which it contributes. Mommsen's conference was to have pledged all participating Universities to refuse to recognize all academic titles not conformable to their standards. Even foreign Universities might join. Certain state examinations should be permitted, and certain scientific and personal associations, like the "Kreisphysicate," should receive, and certain stipends, etc., should be awarded only to, graduates of Universities which were affiliated or approved. Students of these Universities might take their examinations at any affiliated University, even if they had not studied there. The fees for different faculties need not be the same, but it is needful that in the same faculty fees should be the same for all Universities. Bluntschli would even drop the dissertation as an "academic hair shirt" in favor of the publicity of the oral examinations, and protested against Mommsen's "excommunication" of smaller Universities.

Allgemeiner Deutschen Hochschulen—Almanach, von DR. R. KUKULA. Wien, 1888, pp. 1000.

This new and comprehensive bibliographic undertaking gives the date of birth, present position and titles of works of all German professors, not only in Universities but in high technical schools and many Gymnasia and real-school grades, if they have published anything of importance. For about 2000 of the names the editor had to write the brief sketch himself, while very many others not only replied to the circular but overwhelmed him with material. It is therefore not surprising to note at once the entire omission of some important names and pages of titles given by professors almost unknown. The editor complains of the wretched handwriting of many of his savants. A supplementary volume is announced to supply the defects of this. A subject or department index is also greatly needed. Altogether, however, we know of no work which gives in brief compass so impressive a presentation of the immense literary and scientific productivity of contemporary German professors as these thousand pages and five or six thousand names and perhaps 30,000 titles. Such a list of titles and the printed contributions of American professors would be interesting and valuable, but would it fill 1,000 pages?

Lehrbuch der Erziehung und des Unterrichts mit besonderer Berucksichtigung der psychologischen Grundlagen, Für Lehrer und Lehrerinnen, von FERDINAND LEUTZ, direktor des Groszh Bad. Lehrerseminars I. in Karlsruhe I. Teil. Die Erziehungslehre, Zweite Auflage. Tauberbischofsheim, 1887. S. 213. II. Theil, Unterrichtslehre, 1890, s. 445.

A few years ago a new Baden school law required that in all normal schools psychology should be taught, and in the closest connection with the stages of the development of the psychic life of the child. To treat psychology in this way is bitterly hard for those who have settled systems, for with these systems psychogenesis is as revolutionary as Darwinism was to all conceptions of eternally fixed species. Dr. Leutz, however, at once set about writing a text-book that should conform to this significant if not somewhat epochal law. Although the method thus imposed on so true an Herbartian, and follower of Waitz, Ziller, Rein and especially Kern, plays havoc with the "concentration" which is a chief Shiboleth of their school and involves repetition, and is not perhaps the best that could be chosen for the analysis so dear to the ordinary pedagogue of these subjects, Leutz admits that it is the most interesting to students. Only Kahle and Pfisterer have seriously attempted to follow the child's stages of development in the text books of psychology, while Strümpell, Rüegg, Schumann and others make hardly more than a feeble pretence of doing so. Of course home as well as school must be taken into account, for many of the most interesting phenomena as well as much of the fullest and best literature fall in the period preceding school age, but just this helps most of all to a love of children and of teaching, without which the pedagogue is a mere day laborer. The author has not availed himself, however, of all the best sources of child psychology in his own country and knows nothing at all of what has been done in other lands. The stages of childhood development are very inadequately described, and with as little sympathy as insight. The body of the first volume is a detailed presentation of the ordinary German Herbartianism. With all its short comings this has the great advantage of treating of feelings, will, appetites, etc., thus covering in a rough practical way important areas of human nature not yet conquered by modern scientific psychology. The marked features of the book are further: the constant reference to German poetic literature for illustrations of psychological principles and never to scientific sources; the copious lists of text-books, of illustrative apparatus in conconnection with each branch of school instruction; and the frequent illustration of principle by the description of a poetical lesson or two. The book is, on the whole, the best in its field in German, and but for its rather tedious voluminousness we should hope to see it in English, and should certainly be glad to as it is.

Gesinnungsunterricht und Kulturgeschichte ; zur pädagogischen Kritik von DR. E. von SALLWÜRK Langensalza. Hermann Beyer and Söhne.

Instruction through matter that appeals to the feelings, social, moral, and religious—Gesinnungsunterricht,—may be regarded from different standpoints. To provide the pupil for his future experience,—may be styled the "pragmatic" standpoint. Less precarious is the plan of following, in the presentation of the material, the natural order of development of ideas in the experience of the child. This may be called an "organic" instruction. But we may accept the view that the moral development of the individual follows the course of the historical development of the human race in regard to culture. In this case we shall adopt as our guide, in ordering the presentation of material, what may be called the "genetic" standpoint. Are Ziller and his school justified in assuming that what we have to do in education is to take the pupil through a course of stages of development corresponding to the course through which mankind has passed. This book is a discussion of the question, and most of it is a consideration of the Ziller theory of stages of culture. There is a chapter upon Gesinnungsunterricht before Herbart; another on Herbart; a third on Ziller; a fourth on Gesinnungsunterricht in the Ziller school. The views of Willmann, Staude, and Beyer are noted. The last holds that the individual goes over the same course that mankind has gone over: in analogy with the theory of the later natural science, that ontogenesis is an abbreviated phylogenesis. The material of instruction accordingly is found by taking those points in the history of mankind that mark the progress of human labor in separate fields." By "labor" (Arbeit) Beyer means all human activity that is directed to the comprehension of the objective world. With him natural science takes a more prominent place than with Ziller, goes along, indeed, parallel to the Gesinnungsunterricht. But the close relationship between the Gesinnungsstoff and the mental world of the pupil is lacking in the natural-science-instruction of Beyer. The discovery of fire, which is such an important step in human development, has not left any special trace, or stage, that has its parallel now in the life of the individual. Hirt (W.) is mainly in accord with Ziller, but would introduce, in the fourth year, along with the study of the time of the Hebrew Judges, a parallel course from Greek, Roman and German history. He thus increases the amount of historical material till it becomes enormous; and expects the learner to pass through the same moral modifications twice, as the development periods of German history are not presented till long after the corresponding stages in Greek and and Roman history have been put by. Hirt thus gets far away from Ziller, though apparently intending merely to correct Ziller's plan of study in some special features.

What is there in the comprehensive work of Ziller and his school, with their theory of concentric circles of instruction and stages of culture,—for pedagogy to appropriate as of permanent worth? The beginnings of human culture are beyond our reach. We cannot comprehend that there was a time when mankind was without fire, without weapons for fighting beasts. The stages of the hunter, the nomad of the agriculturalist, we know only after they are far advanced, and we cannot make the stages of school instruction correspond fully with the development of the race. Besides, the course of the race has not been straightforward, but sometimes crooked and backward, and intermittent, and we do not desire that the school pupil should imitate mankind's digressions and relapses.

In intellectual and ethical culture it cannot be worth while to try to make the learner "live through" all the stages of the development of humanity; learn the Mexican picture-writing, or speak in word-stems, or live a while without positive morality. We had better take advantage of the results of centuries of culture as these results present themselves in our pupils when we begin to instruct them. In the domain of morals it may fairly be questioned whether the development of the individual imitates that of mankind at large. And is it wise to assume that the "protestant" German empire and the Lutheran catechism represent the highest stage yet attained of human culture. Ziller ought not to talk of stages-of-culture as the foundation of his system, for his scheme of instruction includes only ethical and religious development. And the details of his arrangement are artificial and ill-founded. What is of lasting value is the view that every school should give Gesinnungsunterricht and that historically ordered or arranged.

H. W. BROWN.

Die Pädogogische Pathologie oder die Lehre von den Fehlern der Kinder. von LUDWIG STRÜMPELL. Leipzig, 1890, pp. VI. 225.

Following the principles expressed in his *Psychologie* and *Psychologische Pädogogik* Prof. Strümpell has attempted in this book to lay the foundation for a study of "Pedagogical Pathology" which shall include all those activities of children which are deemed faults by teachers. The task of such a study is to observe children and make a catalogue of their faults, and to consider the etiology, prophylactics, and therapeutics of such faults. As a beginning of such study Prof. Strümpell has made an alphabetical index of all the words used by parents, teachers and others to designate the faults of children. He has also classified these faults, considered the analogies and differences between medical pathology and pedagogical pathology, the analogy between medical and pedagogical therapeutics, and the like.

W. H. B.

Die Erziehungschule nach psychologischen Grundsätzen. Eine pädagogische Skitze in Form eines Lehrplanes. E. DÖRING.

This book presents an elaborate plan of instruction for the Mittelschule, a school holding a place between the Volkschulen and the Gymnasien, and intended to instruct and train boys, from six to fifteen years of age, belonging to the middle class of society. The plan is based essentially on the principles of Herbart. Such a school ought to teach the science of self-education, says the author, ought to make the pupil capable of going on with his education himself. Too often, upon entering life his school knowledge is found to be rubbish. The school ought to impart a living knowledge, that impels the youth to the gaining of further knowledge, and makes him capable of getting it by his own efforts. A course of instruction is laid out in the various departments of study, for each of the eight classes, and in such detail that about fifty pages of the book are occupied with the instruction in religion alone. One of the best things of general application that are said by the author is this. What seems interesting to the teacher is often very tedious to the pupils, whereas if he denies himself and holds the pupils to self-activity, he is perhaps tedious to himself but to them very interesting.

H. W. BROWN.

Conférence sur l'Enseignement par FRANK HORRIDGE, 1890.

La Science de l'Enseignement, par le même auteur, 1888. Paris. Arthur Rousseau, Editeur.

Was lernen unsere Söhne? Was sollen sie lernen? Practische Vorschläge zu einer neuen Schule, u. s. w. Von einem Ungenannten, (also Frank Horridge), Heinrich Minden, Dresden und Leipzig, 1891.

In these brochures the author outlines a scheme of education differing radically from that at present in vogue. He attempts to classify the subjects which should be studied and taught into categories of equal value, viz: *Raisonnement*, *nature humaine*, *langage*, *evénements*, *nombre*, *esprit de saillie*, *force*, *musique*, *couleur*, *forme*. Each of these should be taught three hours a week. The scholars should be classified entirely according to their individual aptitudes for the various categories. They should be left free to develop their natural tastes, and the school thus be made to assist the parent in the choice of a profession. "*Was lernen unsere Söhne*" contains the substance of the author's ideas, and also plans of studies and a chart indicating the supposed value of each category for the different callings in life. H. W. B.

L'enseignement Commercial et les Ecoles de Commerce en France et dans le Monde Entier. Par EUGÈNE LÉAUTEY. Paris, 1886, pp. 774.

Education saves us from decay, but science must be vulgarized. The *Ecole supérieure de Commerce de Paris* was founded by two French merchants, Brochard and Lequet, in 1820, nine years before the *Ecole Centrale des Arts et Manufactures.* Public opinion did not then recognize the necessity, utility or even possibility of such an institution. It was said that to succeed it must teach trade and industrial secrets. The various kinds of knowledge would thus be hard to gather, and gathered they would be hard to curriculize. Such a school would have no clientage at first but must create it. It was of a type then absolutely new, where experience and practice had so far been the only school, and industry had felt little need of instruction. Again it was said that commerce could not be taught if for no other reason that it comprised too many specialties. Such specious objections prevailed with shallow men and men of routine who could not see how much more rapidly and surely youth thus trained would advance. There were no professors. It was said the French spirit was not adapted to reckon with the remote geographic conditions or the long-ranged time considerations necessary for large business enterprises. There were no germs of aptitude that needed this incubation, no progress that needed to feel its way by slow statistical methods to a far more rapid pace by economic instruction. Again after long and brilliant wars nations do not readily pass to the positivism of mercantile careers. Young men prefer professional or even literary careers at such periods and derogate business. Universities and lycées fostered those effete classical ideals that still paralyze industry and commerce in France. A council composed of bankers, manufacturers and merchants organized a triple programme of three years and three offices. Their tentatives have ever since been the basis of this new education in all its subsequent departures. In 1830 the school collapsed from mismanagement when A. Blanqui, a former professor, assumed entire control and for 24 years wrought for the plan and school with singular ability, and died a martyr to his faith in the idea. From 1857 to 1869 the school grew, and itself overshadowed all the vigorous personalities in its faculty. Since 1869 when the chamber of commerce bought and subsidized it it has reached its apogee.

The school now has about 120 pupils, about one-third are demi pensioners and the rest interns, and nearly one-third are foreigners. Its council of 25 members has for its president the minister of commerce and industry. It is situated at 105 rue Amelot. Applicants must be between 16 and 20. Each year six prize scholarships are open to competition in 10 largest cities in France. For all other interns the price for all is 2000 francs per year. The first year or office comprises English, German, French, natural history, physics, chemistry, history, geography, literature and accounts. This year is so hard that many must repeat it before being able to enter the next year. Here commercial history and geography, law, and applied science, raw materials, and

Spanish and Italian are taken up. In the third comptior, book and insurance calculations, technology and other studies are persued. The official school day is six hours in classes, four in study, five for recreation, and nine for rest. The present director, M. Jules Grelley, was a distinguished instructor in the École Polytechnique. There are 29 professors and seven repiteurs. It has graduated nearly 6000 business men, and has done very much to found business upon science, to keep commercial customs severely honest, and to demonstrate the business value of honestly which should be the profession of a business man. A graduate of such a school knows in a general way the systems and policies of taxations in various lands, something of leading industrial processes, banking and financial systems and investments, exact statistical methods, accounts, etc., and is sure to take large and generous views of his subjects. There are also local and one general association of alumni, a monthly bulletin, and a project of mutual insurance against sudden and imminent bankruptcy is contemplated. There is also a Paris society, the *Adolph Blanqui*, which dines and studies further.

The *Ecole des Hautes Etudes* originated with the Athénée Oriental, a learned society which laid down the principle that commercial relations are directly as the intellectual level of a people. They began by appointing a committee to draw up questions to be submitted to eminent men of affairs at home and abroad. Comparative commercial legislation, oriental languages, etc., would widen commercial relations and develop the moral and mental qualities needed to enoble the profession of business. It was to be especially a training school for consuls who were not exhausting their opportunities for unfolding the business opportunities of France. This school intended to be the highest and most complete of its kind in the world was opened in 1881. It was to be a faculty like those leading to the learned societies according to the inaugural of Gustave Roy. Its magnificent building, 108 boulevard Malesherbes, contains two vast amphitheaters, 12 study rooms, and business offices for study, museums, laboratories, a library, 80 chambers for interns and a dining room for 300, 10 examination rooms, etc. The number of pupils have steadily grown from 50 to 128, of whom nearly one-tenth have been foreigners, as was desired about one-half graduates of the lycees. The age of admission was about 18. The chamber of commerce under the patronage of which it exists (it receives no aid from the state), has established scholarship funds and stipends, as have perhaps a dozen other commercial associations, including gas, omnibus companies, etc., and private citizens. The course was two years but has been prolonged to three by adding a preparatory year. Commerce has too long been regarded as a secondary career. The confection of a programme that should be up to the level of modern knowledge and needs and train consuls to far greater efficiency, in short to do for commerce what modern military education has done for war was the end. The director, M. Ed. Jourdan, has striven to make the courses somewhat more advanced than those of the École Supérieur just described, but although it has constantly grown it has by no means yet realized the hopes of its friends in numbers, and preparatory courses which it was found advisable to introduce have perhaps temporarily lowered the standard intended, yet on the whole, taking all its appointments, its large and able corps of instructors, it is no doubt the best of its kind in the world. Perhaps still further changes and reforms are needed before it shall have established a settled *modus vivendi* with the different branches of the public service. The ideal that most of the entering class shall be composed of the best graduates of the lycées may yet be realized. Natural prosperity says the direction depends somewhat upon uprooting the too prevalent idea of these young men that a commercial is less dignified or honorable than a professional or administrative career.

L'Ecole Commerçiale, No. 23 Avenue Trudaine, was opened in 1863. In 1860 M. Denière made an admirable historical report of industrial and commercial education up to date, closing by suggesting some new departures from the school of Tergot and the Chaptal College. The new institution should have a four years course but might give certificates of proficiency to those who were there less time. The age should at least be 12 years, the tuition 220 francs; there should be only day scholars, it should be in a densely populated part of Paris. The Chamber of Commerce adopted this report and appointed a committee, and set apart 700,000 francs to carry out these ideas. From 80 the first year, the school has grown to over 500 pupils. In 1874, free evening courses were established for women. Over 1,700 pupils have attended and another similar school in another part of the city is contemplated. The minister of commerce has contributed 10 scholarships, and the Chamber of Commerce 10, and 22 other leading business establishments, bankers, railroads, weavers, dyers, insurance societies, etc., have altogether given 130 more, and 10 other great industries have given medals of prizes. The expenses of the school are about 120,000 francs per year, and 20 instructors, and a strong society of alumni or propaganda.

The Institut Commercial, was opened in 1885, 51 rue de la Chaussée d'Autin, to form a personelle of foreign commerce, modern languages, etc. Visits to shops and mercantile establishments and instructions by representations of these firms was the plan of M. Maumy, its chief advocate. It was a private enterprise and 200 men subscribed 200.000 francs to the stock with shares at 500 francs. There are now over 200 pupils. Many individuals and firms have given scholarships and donations, and several score of firms have contributed to the museum. Pupils enter at the age of 13; the course is three years; there are no interns. This school is an attempt of French commerce to send as business agents in foreign countries of the great houses, not the unclassed, pretentious men who have not succeeded at home, but well instructed, modest, industrious men. Foreign languages play an important part in the course of studies. Every Monday some representative of a prominent business house explains his vocation with many concrete illustrations, demonstrations of products, processes, etc. During the first half year excursions were made by the pupils to 65 prominent factories or public institutions. A. Bernardini is now the head of the school.

L'Ecole pratique de Commerce et de Comptabilité was founded in 1850, by M. Rigier, senior, who soon died a martyr to his task, leaving the work to his son in 1875. The father sought to abridge the long course or apprenticeship to the shortest term possible, and to simplify and systematize the old cumbrous system of book-keeping, etc. In his publications professors in this school find the subject-matter of much of their course ready-made. The school is at 19 rue des Halles. Its hours are 8–11 a. m., 2–5 p. m., 8–10 evening. Each course lasts three months, and costs 60 francs. Pupils are received from 13 to 25 years of age and can enter at any time. The school is a set of officers, each with all necessary appliances and with all as real as possible. At the shipping or consigning bureau, bundles are wrapped, freight bills, bills of lading, etc., are made. At the room for commercial documents, bills, receipts, quittances, deeds, orders, letters of credit, freight bills, commission notes, bills of sale, etc., are not only seen but made. Book-keeping is a complex and elaborate department. So are the cash departments, the department of correspondence, the salesroom, the library, etc. At first imitation bank-notes, stamps, and bundles were used, now all is genuine and the latter are mostly books. This institution is very complex and of great interest. Some 450,000 people enter industrial and mercantile pursuits yearly in France, and large as are the numbers who take these courses the graduates of this school cannot supply the demand for them.

The other chief commercial schools in France are the following:—*L'Ecole des Sciences et Lettres* at Rouen has a section of sciences applied to industry. It was founded in 1871. Its new courses were Commercial Microscopy, Railroad Tariffs, General History of Commerce. It was attached to the above school in 1883. The city furnishes building; age of admission 14, course two years, fee 250 francs. It has steadily decreased in numbers during the last few years and seems likely to die.

L'Ecole Supérieure de Commerce et de Tissage, in Lyons sprung in a sense from the school of Mulhouse, 1866-1872, which before its extinction acquired such just fame under the impulsion of the brothers Siegfried. The president of the Lyon Chamber of Commerce. M. Guérin first sought to found in the second city of France a school which should make it no longer necessary for merchants to employ Germans and Swiss as their best clerks. The new school was opened 1872. The weaving division alone had last year 137 pupils. There are 18 internes and nine foreigners. It has a growing number of scholarships. Age of admission 14, course two years in each division, the higher and lower. This school retains the patriotic fervor of the time at which it was founded. The pupils are incited to make it a serious moral purpose of their lives to establish French commerce as in a sense the basis not only of national well-being but of all arts and sciences. Honesty is inculcated in every way as the basis of commerce.

L'Ecole Supérieure de Commerce de Marseille was opened 1872, with a fund of 450,000 francs. It is a favorite school for Greeks, Spaniards and Italians and usually has over 100 pupils. Its course is two years with a preparatory year. Age of admission 14.

L'Ecole Supérieure de Commerce de Havre was opened 1871, and that of Bordeaux in 1874.

L'Ecole Municipale Professionnelle of Reims was opened 1875 and has an agricultural department.

All these schools represent in a sense the endeavors of the minister of commerce under whom they stand. So far as he has the rare wisdom to advance commerce, to seriously utilize and develop there sources of the French colonies, to form chambers of commerce in France and abroad, as well as professional syndicates and to elevate business men as well as organization to see their own interests in a large and long-ranged view, these schools will thrive.

There are also 14 different associations which have established free evening courses in commerce or business, all but two of them since the war of 1870, and having over 6000 male and about 2,500 female pupils per year, and in some municipal schools and lycées commercial courses have been introduced.

GERMANY. The famous *Public Institute of Commerce* at Leipsig is the property of a corporotion of merchants, the "Kramer Innung," which has existed since 1479. The school was founded in 1832 at the instigation of a member, C. L. Hammer. The government still gives 4,500 marks per year. Its first director, D. A. Schiebe, was a man of energy and discretion, and his commercial arithmetic and other text books are still among the best of their kind. The next director, A. Steinhaus, had 27 years experience in business houses in seven or eight different countries. C. Wulfrum, the present head of the school, has been successful, and the institution now has nearly 500 students. Age of entrance, 14; course three years. All who pass their final examination are exempt from two of the three years of military service. The school costs about 78,000 marks per year.

The German Academy of Commerce at Prague was opened 1856 and its present head, Karl Arenz, is still its director. Its course is three years, and age of admission 14. The government has given 75,000 francs; pupils from the city pay 250. Those from outside pay 475 francs tuition.

There is no boarding establishment, and graduates have the same miliitary exemption as in Leipzic. Schools at Vienna, Pesth, Gratz, and Lintz, have since been made on its pattern. In Austria alone commerce is taught in 302 establishments to nearly 6000 regular students, and nearly 40,000 clerks and apprentices. In other German states there are at least 85 commercial schools and courses. Special and independent schools of commerce are found in nearly every city of 10,000 inhabitants or even less. There are also private schools, and we know of several others not included in our author's list.

The courses in these German schools are, as a rule, more severe than in French schools of the same grade and age. These graduates are well instructed, well disciplined, enterprizing, they have the keys to many things in their admirable knowledge of modern languages. They may annihilate French commerce as German soldiers did her armies in 1870.

The Institute Superieur de Commerce at Antwerp was projected in 1847, but opened in 1853, and is an admirable institution with now less than 150 pupils. Perhaps no school of its class has so well maintained the international character so desirable in such schools. The course is two years and the minimum age of admission is 16 and one-half, and the methods and plan simulate those of a university. The director, M. Edm. Grandgaigenage, lays great stress upon the practical part of the course, and the sons of the best and wealthiest people of the city attend the institute. This is the only institute of the kind in a country of five and a half million.

It is remarkable that England, the most commercial country in the world has almost no commercial schools. The author is able to find but 24 institutions in all Great Britain which have even any courses that might be called commercial, and not one commercial school proper.

Spain has commercial schools at Barcelona, Malaga and Palma. Holland has one at Amsterdam as an annex, and another at Harlem. Italy has 15, of which the chief is at Venice, opened in 1868 in the Foscari palace, the use of which is given by the city. It trains professors for lower commercial schools, as part of the work. It has had many gifts, and a complete course lasts five years, and it has about 125 students, a valuable library and museum. Roumania has six schools of commerce. Russia has a school of commerce at Moscow founded in 1804, and now nearly self-supporting, one at Odessa, one at St. Petersburg, and one at Vassovia, and commercial lectures in other schools. There is one each at Stockholm, Gothenbourg and Christiania. Switzerland has one at Berne, founded in 1880. Turkey has one founded in 1831, and reconstructed in 1831.

Eastman's Business College at Poughkeepsie, and the Spencerian Business College at Washington are described. The student may enter any day of the year with equal advantages, and no qualifications are required. He establishes himself in the college, makes purchases, invests, deposits, pays rent and taxes, keeps his books, as the course, if it can be called such, is rarely more than three months, very many, often college graduates enter. Nelson's Ladies Business College in Cincinnati is described. In this country there are 269 business colleges or courses. The very meager nature of many of these courses is indicated in the tables given.

NOTE ON AGRICULTURAL SCHOOLS IN EUROPE. The *National Agronomique* of Paris stands easily at the head. This institute has existed since 1876, and is independent, without connection with the University of France or the Sorbonne. The entrance conditions are very difficult, especially for foreigners. The final test, for the middle instruction, the so-called baccalaureate, (which marks the close of the Lycees course) is not sufficient for admission, but a special preparation of from one to two years is demanded. At the last entrance examination 153 candidates offered themselves, of whom only one-third could be received, as there were only some fifty vacancies. The school has especially, for its aim, the education of professors, teachers of agriculture, directors of experiment stations, ministerial offices, civil engineers, etc. Only a small part of the students return later to practical agriculture. The instruction is chiefly theoretic, yet there are laboratories for practical exercises with cattle, in horticulture, and although the school has an agricultural organization the students do not engage in special agricultural work, for a knowledge of this is pre-supposed. The term of study is two years, yet the students who have received the title of *Diplomè de l'Enseignement Superieur de l'Agriculture*, can remain there three years, in order to receive, in the different laboratories of the institution, further practical instruction.

Beside this Institute Agronomique, there are, in France, three "*Ecoles rêgionales d'Agriculture*." These have especially for their purpose education in practical husbandry. The preparation demanded for entrance to the school is small. Three to four classes of gymnasial education are sufficient. These schools are also independent and are called "*Ecoles rêgionales*," because they must correspond to the special agricultural character and products of the country about them. That of Gregnon at Paris gives especial attention to the cultivation of corn, and secondarily to the keeping of cattle; that of Grandjouan, in the west, chiefly to the keeping of cattle, secondary cares for the cultivation of corn; that of Montpellier, in the south, chiefly cares for the products of the south, olives, silk worms, etc., especially the cultivationof the vine, and only a little for the breeding of cattle. In these schools the practical side preponderates. Near Montpellier is now a special school for the cultivation of the vine in the neighborhood of Lyons, a so-called Beaujolais. The director of it is Mr. Pulliat. A very good school for the cultivation of the garden is in Versailles near Paris, under the title, *Ecole Nationale d'Horticulture de Versailles*." Besides these schools almost all of the 86 departments have their agricultural schools or schools for the tilling of fields. Half these schools give also practical instruction in tilling, cattle feeding, etc. The other part is chiefly theoretical. Mr. Hèrisson, formerly Inspector of Agriculture, but very lately Professor of Mechanics at the Institute Agronomique in Paris, last year, at the Parisian Exposition, produced an account of these schools in the general agricultural congress. Whether this has appeared in separate print I cannot say.

Next to the state-schools, there are still other private schools which are especially supported by the catholic clergy. The best of these is the *Ecole d'Agriculture de St. Remy*. It is a theoretical-practical middle school. The Catholic Faculties of Lille university are now introducing agricultural instruction.

In Belgium, there are, beside several middle-schools, two higher institutions, of which, one (since 1878) has united with the Catholic University (Louvain.) The other belongs to the State and is in Gembloux. Both give the title, "*Ingénieur Agricole*," which is scarcely deserved, as the technical sciences taught are altogether too trifling. Higher mathematics is not at all demanded. Mechanics and even chemistry are taught but little. The time of study lasts three years, and the entrance conditions and the studies are about as those of the French National schools, Gregnon and Montpellier. In Vilvarde, there is also a school, of agriculture. Switzerland has also agricultural middle-schools, *e. g.* at Strickhof near Zürich (the practical predominating) and that of Bern. Near by, is a polytechnic school in Zürich, and an agricultural department (for higher studies), which gives two diplomas according to the direction of study. The proper agriculturists receive this "Diploma of Agriculture," the civil engineer the diploma of civil engineering, which is indeed well deserved, as much is required. The time of study for the agriculturist is two and one-half years; for the technical scholars three and one-half years. The agricultural instruction is quite theoretic and more is learned with reference to the breeding of cattle than to the cultivation of the soil.

In Germany, are also many agricultural schools, both higher and lower. The lowest are the agricultural winter schools, then come the schools for tilling the fields and with the rank of a gymnasium of the second class, and which, as formerly in France, were allowed to give the final exemption from the one year military service. The higher agricultural institutions in Germany are distinguished as agricultural academies which are independent, and the agricultural institutes of the universities. The first were formerly predominant, but in the last three decades, have declined more and more while the university institutes have correspondingly grown.

Only within ten years, the agricultural high school, with the agricultural museum, was founded in Berlin. It is not connected with the university. It has beautiful collections, yet the instruction is considered inferior to that of Paris. Germany has 18 other higher agricultural normal schools, of which the most are institutes of the university. The most important of the last is that of Halle (Prof. Sachsen) which numbered the last winter 26 professional agriculturists. This has qualified teachers and fine arrangements. Next to be mentioned is that of Poppelsdorf Bonn, where are from 100 to 110 students of agriculture. The other institutions are less visited (Göttingen, Leipzig, Jena, etc.,) Of the independent academies, where the instruction is somewhat of a lower nature, Hohenheim in Würtemberg holds the first place. All in all, the requirements for entrance in Germany are easier, the care and direction of the students less than in France or in Switzerland; the professors are however well qualified. The independent academies give only testimonials on departure, the university-institutes a teaching certificate of first or second grade. One who has studied three years at least can be also granted a doctor's examination if he has a final testimonial and has completed a dissertation.

In Austria, there are fewer agricultural schools especially for the higher instruction. The most important is the agricultural high-school for the cultivation of the soil in Vienna; This is independent. It is also to.be remarked, that the most important school for the cultivation of the vine in the German Kingdom is found in Geisenheim on the Rhine (a middle school) and in Austria in Klosterneuberg near Vienna. Both are horticultural schools.

With regard to other countries, the people of southern nationalities often go to Montpelier in France. In the south the vine and southern fruits (oranges, lemons, olives, etc.,) are more cultivated; in the north the raising of cattle and the cultivation of grain, and in this much discretion is given to instruction. With regard to the authorities a long explanation would be necessary to characterize every teacher, author or inquirer. In Germany the teaching forces are more scattered than in France where everything is centered in Paris so that only there is the best force to be found together.

Among the best authors on the subject are the following:—Cultivation of fields, Mr. Reisler, Inst. Agr. Paris, (Director); cattle-raising, M. Sanson, Professeur, Paris; Schribeaux, on farming, Herisson, on mechanics of farming; Prillieux, on pathology Schloesing, Mäntz, Girard, etc., all professors of Paris. I must also add Grandeau, Leclerg, and Lerouteaux. Pullicit for cultivation of the vine.

In Germany, for general agriculture, see Märker of Halle, Wagner, and Mayor of Heidelberg, Stutzer of Poppelsdorf-Bonn. For raising cattle, J. Külm of Halle, Krämer of Zürich, also Wilhelm and Hermann von Mathusins of Halle, Wilkens of Vienna. For cultivation of grain, Kühn of Halle; Nowacki of Zürich; Rimpan, of Schlangstadt. For agricultural machinery, Wüst, of Halle, Perls, of Vienna, Lazar of Pesth, etc.

DR. M. HUSS, *Agronomic-Engineer.*

La réforme de l'enseignement secondaire. Lettres au ministre de l'instruction publique, par FERDINAND RÉAL, *Redacteur en chef de l'Independant Rémois, avec une Lettre-Préface de M. Jules Simon, pp.* 62, *Reims Libraire F. Michaud, Editeur.*

The reform proposed in this Letter covers, not only the programmes and methods of instruction in the secondary schools of France, but the appointment and duties of the professors and tutors, and the bestowal of scholarships. The vital part of the reform, however, is that which relates to the classification of pupils and the compulsory courses of study. M. Réal reviews the present programmes and the changes that have been made in them by successive ministers of instruction to show that all that has been done has failed to reach the existing evils. There has been amelioration but no cure. A cure demands a complete recast of the organization, as well as of the plan and of the method of the secondary schools. He then sketches a plan somewhat in detail, and urges the minister to apply it to one school for the purpose of testing its merits. Substantially it is this.

In the words of M. Ernest Lavisse, member of the higher council of public instruction he would "substitute for the rigid system of classes, courses in which the pupils would be arranged according to their aptitudes, or even their tastes." A certain pupil, for instance, who has made rapid progress in mathematics, may be assigned to the highest class in mathematics, while because he is deficient in knowledge of the French language he may at the same time enter the lowest class in that study, and so on through all the subjects taught. The school will thus be composed of homogeneous groups to which the teachers will be able to adapt their instruction with the certainty of obtaining tangible results. Intelligent pupils will not be kept back by the "queues" of the class, and inferior pupils will not go beyond the limits of their natural abilities; they will go out of the school, however, better instructed in what they have studied. M. Réal is enthusiastic in contemplating the emulation that would be excited in a "homogeneous" class of students, and the enjoyment with which a teacher would instruct such a class. Pupils are to be allowed to choose the courses they will take, but only after conclusive tests of fitness, and with the approval of teachers and parents. A pupil may begin Latin in the first year and abandon it in the second; or, if he is strongly inclined, may choose scientific studies, and in case his literary tastes develop be transferred to the elementary classes in the dead languages. Among the many objections and difficulties pre-supposed and removed is the question, "what will become of the examinations? How can preparation be made for a degree?" M. Réal answers frankly that one of the great advantages of his reform will be the suppression of the Bachelor's degree. In place of it he proposes the following device. Every pupil on entering the school will be provided with a record book, *cahier scolaire*, which will be given to him when he leaves. Each year the teachers will enter in this *cahier*, under their signatures, the courses pursued and the results. Then whenever the pupil leaves he will take with him an exact record of what he has accomplished and this record will serve as a pass port whether he wishes to enter another school or to find employment. The courage of this reformer does not desert him at any point. If this multiplication of courses makes it necessary to lengthen the school day he sees no reason why the hours which by long custom have become fixed as the limits of school sessions should be regarded as sacred. He would have the hours regulated by the season and the demands of the work.

E. M. H.

Un Lycée sous la troisième République, par PAUL VERDUN. *Paris*, E. DENTER, *éditeur, Libraire de la Société des gens de lettres et des auteurs dramatique.* 1889, pp. 462.

"I shall be asked," says the author of this book in the preface, "why

I have sketched a picture of life in the provincial Lycées, and the portraits of the officers who direct them." To the anticipated question he replies, "For a number of years the statistics of the Minister of Public Instruction disclose a two-fold fact; there is a constant increase of expenses, and a not less constant decrease in the number of pupils in the schools supported by the State. In order to arrest this decadence the ministers load the programmes more and more, the *recteurs* change the regulations, the physicians publish reports on overwork and —the disorder increases, and the academic palaces are empty of pupils. On one side the expenses are enormous, on the other the results are pitiful. I have uncovered the sores of our Public Instruction because the wounds which remain hidden gangrene and cause the death of the whole body, while those that are exposed are easy to cure."

Seriously as this writer approaches his subject it is difficult to take him seriously, partly, perhaps, because his attack on the government management of the Lycées takes the form of a tale in which he gives minute details of the private life of his hero which are neither significant nor edifying, and partly because the state of things exposed is so surprising. The tale is the life of a tutor, that is, of a master who does not teach, but who watches the pupils at all times when they are not in the classes of the professors. The narrative of the difficulties and dangers which a young man in such a situation meets furnishes an opportunity to draw the portraits of the principals of several schools and to give the details of administration and government. Four different Lycées and one college are thus exhibited, the heads of which are declared to be types. In one instance the principal is a man of high moral character and sufficient mental endowments, who devotes his time and powers to the conduct of the school. The others are men as destitute of moral character as the Yorkshire schoolmasters whose occupation Dickens is said to have destroyed by painting the portrait of Squeers. If they are less ignorant and brutal they are not less wicked, and have the same object in view, namely, profit to themselves by the easiest means. One is an habitual drunkard, one gives all his time to the breeding of rabbits and all are controlled wholly by a desire to keep the number of their pupils from diminishing. All the evils naturally following such debasement in the heads of establishments abound; lack of discipline, moral corruption, failure of scholarship.

M. Verdun aims to expose the condition of the schools rather than to dwell on the causes of their decadence, but he hints at consolidation, secularization, favoritism, formality of inspection, and the difficulty of displacing a principal once appointed.

In 1882, an association of tutors was formed which began the publication of a journal called at first *Le Progrès Universitaire*, now *La Réforme Universitaire*. In consequence of this the condition of the tutors has been improved and some of the most incompetent principals have been dismissed. But if there is excuse for writing this book the state of things is still astonishingly bad.

E. M. H.

Manual Training in France. A. Salicis, late Inspector-General of Manual Training, Educational Monograph, New York, 1890.

In 1882 manual training, which had existed chiefly in the form of apprenticeship or preparation for special callings, was made obligatory for the different grades of primary instruction. A special normal school for manual training was opened, with an attendance of 48 graduates of the Université de France. The school was suppressed after graduating 72 professors of manual training, most of whom are now engaged in the various normal schools. It is hoped that in 15 years most of the 40,000 elementary schools for boys will be provided with competent instructors. The object of elementary manual training is not to prepare for trades. Even the young children should begin active work with wood, instead of the quiet occupations of weaving, basket-work, plaiting, etc. In about half of the two hundred boys' schools in Paris the older pupils have manual work.

The extension of this instruction is still hampered by the lack of a definite programme and of competent teachers. J. F. REIGART.

Report of the Indian Education Commission, appointed by the Resolution of the Government of India, Feb. 3, 1882. Calcutta, Government printer, p. 639, and 77 pages of statistical tables.

After the provinces here chiefly considered came under British rule in 1854 an educational department was founded (1855–6), and examining universities established at Calcutta, Madras and Bombay (1857) which like that of London examined only but did not teach, but were affiliated with various colleges. The commission of 1882 was appointed to inquire how far the policy of 1854 had been adhered to and what progress had been made in a quarter of a century. This report recommends encouraging indigenous schools according to the results of examinations; that while their curriculum or personnel be interfered with as little as possible, they be inspected *in situ* by government boards if they wish aid, but otherwise be left alone. These schools were very reluctant to alter their methods or raise their standards. The unaided schools had to compete not only with improved native schools but with new government schools, which were pushed especially in the backward districts by the creation of boards to whom great discretionary power was given. Instead of the theory of downward filtration the committee recommend that the chief effort of the government be to extend primary schools, and that low cast pupils be brought into schools where practicable. For the establishment of secondary, unlike primary schools, local co-operation should be indispensible. Scholarships must all be made links between the different grades of institutions. Concerning the 65 colleges it is recommended that more native graduates be employed as instructors, that a moral text-book based on natural religion and not offensive to Mohammedan, Brahmins or others, be made that two per cent. of the government aid be appropriated to scholarships. In all fields of education, epecially most of the higher, the government should plan to gradually withdraw and leave more and more to the locality. The government patronage of educated men must be systematized and encouraged. The report concludes by recommending special favors and encouragements to children of aboriginal tribes, and that the elementary instruction be in their own language if it has been reduced to writing, that girls schools be aided more than boys, that special teachers examinations be encouraged, that no boy be refused admission to government schools because he is of low cast, that Hindustani and Persian be taught in localities chiefly Mohammedan, that special schools be established for sons and relatives of native chiefs and noblemen, that vernacular school journals be encouraged, that text-book committees, voluntary in addition to official inspections, travelling university scholarships, alternative college courses, special lectures on the duty of man and citizens, be encouraged, and that a system of scholarships open to general competition and tenable in any college be established.

History of Indigenous Education in the Panjab since annexation and in 1882, by G. W. LEITNER, L. L. D., Calcuttta, 1883.

This volume of 4-500 pages is made up of smaller papers and is a most remarkable and fascinating description of native schools of the several races and religions, as well as grades in the Panjab and an indictment of the policy of the British Government in trying, happily with but partial success, to supplant them by European schools of an inferior and hated order, and a refutation of the preceding report on English education there. Nowhere was love of learning stronger or the sacrifices made to maintain it greater. These were ridiculed instead of being sympathetically studied and developed. Dr. Leitner arrived in India in 1864 and strove to arouse the old spirit of self-reliance among the natural native leaders who had retired before the supple *parvenus* of their race who would fawn upon the English and had thus come to monopolize official favors. By reviving these schools and introducing English into them he started a happier combination of eastern and western ideas. He thus strove to abolish government schools by means of voluntary native organizations and making the "comparative method" between eastern and western branches of learning a stimulus to all who study.

The Panjab is classical and teeming with noble and ancient memories, where the priest was professor and poet, and education both a religious and social duty. Fakirs, jogis, minstrels or genealogists, astrologists, or almanac-makers, pandits, and even Brahmins teach, and without class instruction that reduces intellects to a dull common level, in huts, markets, private dwellings of all sorts, on ships, and every child save the outcast alone is taught not only to read and write a difficult language and to compute, but a mass of traditional literature and morals. Teaching has made the Brahmin caste which is now maintained only by their monopoly of learning. It is a sacred duty for those who know to teach, and by virtue and education in four stages ending in asceticism and meditation it is possible to reach the gods. Elementary teaching often begins with a form of contract with God. The alphabet is sacred, and new letters have almost upset religious belief. In so subtle and complicated a language grammar is philosophy, and as the sage passes on in the curriculum and correspondingly progresses in virtue he often attains a point where he studies downward or backward till the consummation of his knowledge is focused upon the child's rudiments and thus re-incarnates his soul which had been re-born perhaps twice over by love of youthful studies. Schools are for elements and advanced branches and not only is instruction individual, but the student often travels from teacher to teacher, and takes an university course, one branch at a time, as in the "one study college" established some years since in this country. Genius is so common in India where only lack of the means of communication prevents it from bringing fame, and a savant's life is often so devoted to study that his curriculum is his biography, and his culture gives him such poise and repose, even if in rags, instead of making him restless rather than intelligent as is too often the case with western culture, and teaching of all kinds is so essentially private, not only with girls, and gives technical words, and even dialects peculiar to each trade, and a secret to all others, with its marvellous system of accounts and book-keeping, short-hand, and mental arithematic in which even children are adepts, with its ideal curriculum of lexicography, grammar, logic, law, rhetoric, poetry and literature, the crown of all, but in which sure and finished science is forever set as gems, that it is not strange, that, when their conquerors tried to enforce an alien culture based on physical science and industry and trade which appertained to their lower classes, begun to organize schools by appointing inspectors who would banish privacy, teach by classes, even placing girls and boys side by side, when they had more to learn than to teach, despising memory which to them was the mother of all the muses, and the depository of all the sacred treasures of 3,000 years of greatness, teaching their children a new and strange language, and worse yet religious disbelief, causing their own schools to decline from one to every 1,441 inhabitants to one in 9,028 in a few years, that they hated such a policy and welcomed the plan of our author of simply aiding all native teachers who would add to their own a certain few government subjects. In the Panjab alone are at least 1000 indigenous schools and nearly 100,000 pupils. Under government influence these have been reduced one-half. The Lahore College is now the centre of the new movement. Many quotations from sacred books, especially the Hitopadesas, placing knowledge above all other qualities and possessions reflects the national sentiments.

Professor H. P. Bowditch says as follows:

In any statistical inquiry the average value of a series of observations gives but a very imperfect idea of the series itself, since two series differing widely in their range may have the same average value. To meet this difficulty the method of percentile grades has been divised by Francis Galton, Esq., F. R. S. The method consists in determining a series of values representing limits which are reached by various percentages of the total number of observations. The value which divides the whole number of observations into two equal values, *i. e.* the value below which one-half, and above which the other half of the observations lie, is called the 50 percentile grade, and as a rule does not differ materially from the arithmetical average. The value below which 10 per cent. and above which 90 per cent. of the observations lie is known as the 10 percentile grade, etc., etc.

If observations are made upon the physical peculiarities of any natural group of objects as, for instance, upon the height of a number of individuals of the same age and nationalities, it will be found that the curve, the ordinates of which express the values at successive percentile grades, will be at the beginning concave and at the end convex toward the abscissa, while the greater part of the middle portion of the curve will not differ materially from a straight line inclined to the abscissa.

The application of this method to the study of observations made fifteen years ago upon the height and weight of about 24,000 Boston school children of both sexes leads to the following conclusions:

1. The period of accelerated growth in height and weight occurring just before the age of puberty, as revealed by a comparison of the average heights and weights at different ages, may also be observed when the values in successive years at any given percentile grade are compared with one another, but the period in question occurs earlier in the higher than in the lower percentile grades. In other words, large children have their period of accelerated growth at an earlier age than small ones.
2. The period during which girls are taller and heavier than boys of the same age, as shown by a comparison of their average heights and weights, exists also at the various percentile grades, but this period of female superiority occurs earlier in the higher than in the lower percentile grades. Superiority in height differs, however, from superiority in weight in the following respect, that the former is more marked, both in amount and duration, in the lower and the latter in the higher percentile grades.

In other words, during the period of female superiority tall girls surpass tall boys in height less than short girls surpass short boys while heavy girls exceed heavy boys in weight more than light girls exceed light boys.

Details of this investigation with tables and illustrative curves will be given in the next report of the Massachusetts State board of Health.

A new Review of National Education, by Heather Bigg. London 1890, pp. 117.

A national plan for catching and developing all genius, to avoid narcotizing with learning, to act as bear leader to young cubs home from school, teaching them of things they see on foot in city and country as the Great Teacher taught and to be mongers of brain seed, are commended. Memory should be trained unconsciously. Men mnemonically gifted are often very feeble. Artificial groove education kills circumspection, and may make the mind only a phonograph repeating badly what is told. Save in mathematics, text books are rear-rangements of advancing knowledge. The feudal minstrel was a great educator. Italy and Germany have been created by national ideals, which are feeble in England. Mr. Biggs wishes to see all the noblest in British chronicle and history from Arthur to Wellington gathered in one national book, and read in every school. It is not enough to sing Rule Britannia and God Save the Queen, but a great Race Book, a monument to the dead and a guide and inspiration to the living, forming and binding national aspirations, quickening the loyalty of Canada and Australia; should embody the racial idea in a British Bible. This gave a fixed character and line of direction to the ancient Hebrews. English history teems with soul-stirring examples and precedents. Well distilled and well instilled, such a book would express a racial idea whence might come formularies, lodges like that vast repository of potential forces now aimless save for its charities, free-masonry. The Old Testament was such a reservoir of moral power. It was a didactic engine quite apart from the chronicle of fact, embodying the highest lessons of history, the noblest hymns and epics and the centre of crystalization for the national spirit. Green's Short History took a long step towards this focusing within its field. From 10 to 20 is the most educational period. Later judging and balancing supervene. Leisured reading then must abound in school, and the moral and aesthetic heart of literature and history and not their shell of dates, details, philology, or grammar should be cultivated. As a first step, a body of censors should prepare a list of reading and all others should be excluded from school, as should mere grammarians and philologists, that the child may taste the fruits of the tree of life before those of the tree of knowledge.

A Plea for Pure Science. Address by H. A. ROWLAND. From the proceedings of the American Association for the Advancement of Science, Minneapolis Meeting. Salem, 1883, pp. 21.

This deserves a classic place in the historical literature of science. It was delivered on the eve of the scientific awakening here during the past few years, and its importance is enhanced by the remarkable work which the author has himself done to bring about that awakening. To a civilized nation of the present day the applications of science are a necessity. But in answer to the question so often asked, which is the more important to the world, pure or applied science, we have only to say that, to have the applications of a science, the science itself must exist. Our country has been able to record its great development in applied science, "only for the reason that there are certain countries in the world where pure science has been and is cultivated, and where the study of nature is considered a noble pursuit; but such countries are rare." In our own, as in most of the countries of the world devotion to pure science with earnestness of purpose and singleness of heart requires a moral courage which but few possess. But for generations there have been a few, a noble few, who have esteemed the study of nature the highest of all pursuits. And to these men the world owes all its progress due to applied science. This work, this searching into the laws of nature, has but begun. "Shall our country be contented to stand by, while others lead in the race? Shall we always grovel in the dust, and pick up the crumbs which fall from the rich man's table, considering ourselves richer than he because we have more crumbs, while we forget that he has the cake, which is the source of all crumbs?" The time is ripe for this country to take a higher stand than that shown by its past record, and the signs of the times point most encouragingly in that direction.

The curse of our country has been mediocrity, and that curse still weighs heavily upon us. We have more than four hundred institutions calling themselves universities or colleges; more than are possessed by all the rest of the world. If the multiplication of these can be averted, and the wealth and energy devoted to higher education be concentrated and applied to the maintenance of colleges and universities worthy to be called such, the gain will be incalculable. Our institutions must teach thoroughly the sciences into which they introduce young men; for "it is useless to attempt to advance science until one has mastered the science." Our standards of comparison, too, must be changed. As long as we compare ourselves with mole hills we shall be satisfied with insignificance, or at most, mediocrity. It is only when we compare ourselves to the mountain that our real littleness becomes apparent, and our real desire to grow begins. In the great work of advancing science all can help. If we cannot be geniuses ourselves we can point them out to others; and we can have high ideals, and instil them into those with whom we come in contact. LEVI L. CONANT.

Suggested Reforms in Public Schools, by C. C. COTTERILL, M. A., Assistant Master at Fette's College. Edinburg, 1885, pp. 178.

British public schools are the product of the genius of Dr. Arnold, and have existed in their present form about half a century. Hardiness, robustness, healthiness which is etymologically the same thing as holiness, is the end. There is no salvation for nations or individuals unless lives are made simple and hardy, and there is nothing but disease, decay, death,—physical, mental, moral and spiritual, in luxury. Change into flannels and a minimum of one hour's exercise out of doors in all weathers should everywhere be required. A school which had just offered a scholarship of 50 pounds for five years beginning at the age of seven, and thus seeming to require a preparatory school, is the text of much vigorous writing against the "plague spot of brain competition." The mere athlete is half man, half beast. The mere scholar is half man, half ghost. The tuck shop must be suppressed or the food it sells controlled. Only fruit and bread and milk should be sold between meals. Boys must be regarded as something more than mere brain-examinees. They shrink from being examined on books they really love, as a sort of profanation.

University Extension, by SYDNEY T. SKIDMORE, Lippincott's Monthly Magazine. Oct. 1890.

Twenty-eight hundred millions of capital are engaged in education in this country and none of it is available after the limits of youth are passed. Most of it is wasted in forcing children. Education should not stop short in youth but should extend through life, and diplomas be won part by part gradually, and not at once. The bank of learning should accept small deposits and not big ones only. Midday, holiday, evening schools, lectures, readings, etc., should gradually close in on the leisure left by shorter hours of labor, and on the time spent on the street and in idleness. Mental should not be apart from and still less opposed to bodily culture. The serapion and athenaeum represented the age of dialectics, ecclesiastical schools faith, the heavenly reason; but the new era now dawning is based on economics, and is incompatible with the scholastic scheme. This better mental fabric is not made in mind schools, but in experience schools. Professional education is not in harmony with the new universal education. Chautauqua has one hundred thousand members, and manual training school, Colleges, are reservoirs of knowledge and their selfish dams must be pulled down. We need canals for irrigation. All this is not pedagogic communism.

Year-Book of Scientific and Learned Societies in Great Britain and Ireland, etc. London, 1885, pp. 231.

This is the second issue, compiled from official sources, and also gives titles of papers read in 1889, in 14 departments of research. The first edition contained a concise history and account of the organization and condition of membership. Between six and seven hundred societies are described in these convenient pages. Law, medicine, and even photography, agriculture, horticulture, naval science, etc., are included. The Royal Society and the British Association lead off. The latter made 36 grants of its money mostly in sums of from 50 to 500 dollars to further scientific investigation, and set its seal of approval and recommendation on 17 others. Most of the societies are small and entirely local, having no rooms and but very few papers. This number is significant for the diffusion of scientific and literary interests.

The International Scientists' Directory, S. E. CASSINO, Boston; p. 205 and 286.

This contains names, addresses and department of most scientific men throughout the world, arranged alphabetically by countries—in all some 12-13,000, and is a very convenient hand-book. Even South American states and out-lying islands are represented. The omission of a few great names is noted, but the number of amateur collectors, photographers, as well as doctors, taxidermists, instrument makers, dealers in scientific material of all sorts, is yet more remarkable. Error in the direction of too much is better than paucity.

La Decadenza dell' Universita Italiana. Prof. T. MARTELLO. Bologna, 1890, pp. 138.

This inaugural address, printed with many enlargements, is a brochure of great suggestiveness. In the present period of national resurrection his country should shine by the glow of its own genius and by no pale reflected light. His motto is *ab imis fundamentis.* He can sound the alarm of university decadence as members of the council cannot whose indifference to educational institutions is often profound.

Greece represents education to citizenship by fatigue of body and mind, but ancient Rome was based upon education which first in history under Vespasian was at state expense. He gave 100,000 sesterces annually to professors, among whom was Quintilian, who had Pliny and Tacitus for pupils. The municipality sustained schools and prepared youth for the toga virilis. Neither Augustus Tiberius nor the later emperors neglected superior seats of learning, many of which became famous and were aided by government favors. Jurisconsults were often made state secretaries, and provincial governors, praetorian prefects, and the imperial power of Augustus was greatly enhanced by literature. Pliny said *Scholasticus est, quo genere hominum nihil aut sincerius, aut simplicius, aut melius.* Rhetoricians followed victorious generals, and mental followed close on the heels of military conquests. After conquering Brittany, Agricola brought the sons of native chiefs to school to learn Latin and to become impassioned by Latin eloquence. After the conquest of Gaul by Cæsar the famous school of Autun was founded. Eloquence and the schools made Roman unity, moulding races of most diverse customs and beliefs, joining their interests and making them submissive. In Africa, Dacia, Pannonia on the Rhine the school was the secret of Roman supremacy. Upon it, amidst their greatest perplexities, the rulers chiefly relied, as did primitive christianity, though at first hostile. The most difficult part of Charlemagne's task was his attempt at intellectual regeneration. When, in a chaos of corrupt dialects and barbaric races, papacy and empire contended for supremacy over the corps of the old civilization, *Roman law*, the only tradition of the past, was a rock amidst the waves of anarchy, and at last, after A. D. 1000, with the gloss of Irnerius, and the University of Bologna as its organ, kindled a new light and was the center of crystalization for the modern world. In a peculiar sense then Bologna is the cradle of superior studies, and it revolutionized the laws and economic institutions of the whole world. Municipality and university were the two original forms of association, acting and reacting on each other like cause and effect. It was the classic time of Italian democracy, and in a true democracy knowledge is chiefly revered. Both stand for freedom and strength, individual initiative and personal responsibility, in a word, common law. Thus the classic period in Italian history is this, when communities and universities were developed, both typical, both spread over Europe, both together engendering the true spirit of nationality, as well as the renaissance. Only demagogy, the barbarisms of ecclesiastical law, and absolute monarchy later crushed out the spirit of both science and municipal liberty. Most universities grew local and servile instead of universal and free, schools and sects arose. Theology became disputatious and peevish and dimmed the clearness of scientific insight. The universities of Venice and Piedmont stood out against inquisitions and the popes. The first had a history behind it, and had long been the constant and jealous care of the Senate, who intrusted its government to the *triumviri studiorum*, or *moderatores academici*, or Reformers of Studies. In Piedmont E. Filibert intrusted the new university to nine Reformators, and later had the splendid *Magistrato Riforma* strengthened and constitutionalized. It was from this centre that the nucleus of Italian unity unfolded, just as Prussia, which had the best universities, became the nucleus of German unity. In Germany, where the national flag has always hung in the sanctuary of science, universities, which have lately been created or strengthened to mark or complete victories, were formerly erected to repair defect, and in 1807, when Fr. William III was awaiting at Memel Napoleon's permission to return to his capital, he promised Schmaltz to create the University of Berlin to replace lost military power by greater intellectual power. After Sedan an eminent Frenchman, Geo. Cogordan, said, "The intellectual superiority of Germany, which was a thousand times more formidable than her arms, must be entirely attributed to her excellent universities." The feeble French Academy of Strassburg, Germany, was made into a model university, the first cost of whose buildings alone was $5,000,000. Universities are the soul of institutions and laws, and exercise an amazing moral influence; they are the pantheon of traditions, the crucible of ideas for an entire nation. They lead every intellectual movement.

The Swedish reverence for universities is almost superstitious. Russia is becoming a great emissary of culture for Eastern and Southern Asiatic races, and is basing its national life more and more upon higher education, thus laying deep and sure foundations for populations and wealth in Siberia and Tartary, and of constitutional government for itself. In our age of great colonial enterprise and energy, Holland forbids schools in Java and keeps the people almost in slavery. England established 50,000 schools and three universities in India where 90,000 govern 200,000,000.

The only European state which does not give important or even serious attention to its universities is the new kingdom of Italy. Her science once offered a refuge to powerful intellects which politics excluded from the world of action. Universities were forts where arms of revolutions were forged. Italian reformation was a movement which started at the top of culture and worked downward. France has anaemia at the extremities (for the faculties are in no way scientific but only professional) and apoplexy at the head. Mr. Bonghi has urged the unique American idea of giving the control of the university to those who are not part of it. Austria is praised that she did not found a university at Triest to cement her conquest, and so is the former Austrian university at Padua. Even the German plan originated in Italy.

The present sad state of Italian universities is shown by the refusal of some smaller provinces to permit their students to attend larger ones in other Italian provinces, or to receive those from outside. When all else was dead in these centres save the freedom of university life and love of country, it was from these that new Italy sprang 30 years ago. Now mild ameliorations have brought stagnation so that "we were better off when we were worse off." University laws overlap, are very complicated and voluminous, contradictory, often change, etc., so that constitutionalism is but a name. In some points the conflict of laws takes universities back to a papal bull as the only solid authority. Ill-framed ministerial circulars, blind bureaucratic caprices and abuses, elaborate provisions for impossible exigencies, failure to repeal obsolete or dead-letter laws, decrees, or edicts, make anarchy in university administration. Chairs are no longer inherited but are very often given by favor and not merit. Some scholarships virtually come from the pocket of the professors. The state forbids political societies, but they abound among students. At Naples agents of the professor sometimes bribe new students to inscribe in courses they will not hear because the state pays matriculation fees to the professors, some of whom have a large income from fees but give no instruction. Some provincial universities have but five or six students but a relatively large income, so it is jestingly said they are turning into banks. Much is often spent on novelties. The eight chief universities should receive all the care of the government and the rest be left to die. Professors should be less often selected from high schools. There is far too much freedom of election in studies and much time is lost by taking first what should come last. The "carnival life" of a student, which lasts four or five years, usually ends in a degree however unworthy he may be. Since 1877 only 10 professors can belong to the National Chamber, but several commissions make much draft upon his time. The ignorance, sloth, and superficiality of many of them is incredible. They are mere routine office holders, while others give their entire health, time and lives to laboratory and museums, clinic, library, etc., and know no other world. The scandalous Books of Attendance make attendance seem 100 per cent. when it is not above 33. These things all favor arbitrariness.

The author recommends: I. That all technical, professional, agricultural, and other superior schools be incorporated with the university. This would reduce expenses and bring new life. II. The provincial universities that seem to exist only for boarding-house and shop keepers should be suppressed. Their degrees now have very little value. III. The legal status of the university should be totally reorganized. Prussia at a time when the finances were greatly reduced, appropriated for the nascent university of Berlin a sum equal to all then spent by France for all its superior establishments together. The body of students is finally exhorted to free science from thraldom to utilitarian ends, to make literature more respectable, criticism less negative, laws less confused and equivocal, and a national economy in education less wasteful.

Das Schulwesen Italiens, besonders die Realschulen Italiens im Jahre 1878, von DR. MAX STRACK. Bielefeld und Leipzig, 1878, pp. 80.

At this date everything seemed to Dr. Strack to point toward a second renaissance in Italy, but everything was in a state of transition and nothing was firmly established. His pamphlet begins with a sad picture of the state of education in Italy during the preceding 10 or 15 years. School houses were small, badly lighted and ventilated, and very repugnant to the out-of-door habits of children of this sunny clime. Some of them were without seats, and in others children must be packed so closely together that their morals sometimes suffered in consequence. Parents needed their children to help at home, feared they would learn to despise them if educated, or objected to have their daughters taught to read, lest their inflammable fancy should be kindled by romance, or to write lest they should learn to commit to paper their own ideas and sentiments. The clergy did most of the teaching, imparted only the most mechanical training of the memory, and strongly opposed real modern ideas as pernicious fruits of the tree of knowledge. The Suez canal, which put Italy on the sea path to the east, did not arouse the energy to profit by the opportunity. Its soil and climate are propitious, but tools, though not perhaps as primitive as in the day of Cincinnatus, are anything but modern. As silver from the new world enervated Spain, so now travelers and their wealth retard the indigenous development of the country. The people were poor, and the government had little means, but local princes co-operated, and between 1861 and 1866 the number of schools and pupils in one province more than doubled, and over 1,800 new schools were established in Italy in six months. In 1877 the government made attendance between the ages of six and nine a legal duty, adding another year for backward pupils, but permitting good ones to leave earlier. Compared with Germany salaries were small.

Real schools, under several names, were established by the comprehensive law of 13th November, 1859, by Minister Casati, first in Piedmont, Sardinia and Lombardy, and then gradually elsewhere. These schools comprise two grades of three years each, have no Latin, even in this land which inherits it and where it is so strongly clung to in the Gymnasia and Lycées, but in public institutions the catholic religion was to be taught by a director named by the minister. The lower grade of three years constitutes the *scuole tecnichi* and is an institution by itself, as is the upper three years called *institute tecnichi*. The schools must be in cities of 20,000 inhabitants and be supported mainly by them, although the state may aid to the extent of paying half the salaries. The institutes belong in the cities of 40,000 inhabitants, and may also be aided by the state, but their courses are more specialized to fit the local industries. All professors, both titular and regent, as in all secondary schools, are permanently named by the king from the list of eligibles, but lower teachers—institutori and incaricati—may be named by the local board for one year. In the schools instruction is free, but in institutes there are entrance and examination fees. The diploma of each grade opens certain public offices. In 1878 there were in all Italy 63 royal schools of this kind, 88 of equal rank or with full courses, and 159 free or partial course schools, and 72 institutes, of which 41 were royal, and most of which had all four sections. All of these 382 Real schools save a few in northern Italy were established by the kingdom. This, says Strack, deserves the laurel of praise even from Germany which traces the history of her Real schools back to Hecker and 1792.

Raccolta Completa di Testi di leggé, Decreti, etc. Dott. Bruto Amante. Roma, 1890, pp. 470.

This second triennial volume of official regulations of all kinds touching public instruction covers the years 1887-8 and 9, and presents a convenient general view of education in Italy from the government standpoint. There are now 16 universities under state control, as follows: Bologna, Cagliari, Catania, Genova, Messina, Modena, Napoli, Padova, Palermo, Parma, Pavia, Pisa, Roma, Sassari, Siena, Torino, not counting the four free universities of Camerino, Feraro, Perugia, Urbino. The administration of these, including rectors, secretaries of several grades, beadles, involving 93 officers, costs the state 345,000 lire per year The Superior Council of Public Instruction, of which the minister is president, now consists of 21 members, all appointed for seven years by the king, of whom five at least must not be instructors. This body is divided into three sections, for the three grades of public education. All rectors are nominated by the king, and their functions, as well as those of inspector, local administrator, etc., are not very unlike similar functions in France, described in the first number of the SEMINARY. The

Universities are still under the fundamental law of Casati, Nov. 15, 1859, to which are appended many exceptions and amendments. Besides the Universities the naval academy at Livorno, the military and civil academies at Napoli, Firenze, Milano, Roma and Messina, the royal military academy at Torino, and the school of Forestry at Vallambrosa, which are all schools of higher or academic grades, are described. In the Licèes Italian, Latin and Greek, and in this order, claim the student's chief time. .

Statistica dell' Istruzione Secondaria, e Superiore. Roma, 1889.

This publication of the Ministry of Agriculture, Industry and Commerce, covers the scholastic year 1886-7, in which there were in Italy 735 gymnasia and 326 licei, with 58,000 students. There are 493 institutions for secondary technical instruction, or one to about 57,727 inhabitants. The 17 government universities, counting Sassari, contain 15,196 students, and the four free universities in all 345 students. In all there are 633 professors. To three of the licei certain university courses are annexed. Medicine has most, and law, science, letters, less students, and in this order. Venezia, Basi, and Genova have superior schools of commerce, Firenze of social science, Ferenze and Roma higher normal schools for women. Portici and Milano higher schools of agriculture. Turino an industrial museum. There are 32 larger libraries of which 12 are directly under the government.

Stato di Provisione della Spesa, etc. Roma, 1887, pp. 255.

This statistical hand-book is published by the minister of public instruction, and shows a grand total for education of 40,510,744 lire. Of the universities Naples received most from the government for the year, 207,700 lire, and Cagliari least, 18,592. Of the colleges of music, Milan takes the lead with 37 professors. Fifty-nine normal schools have altogether less than 1000 students of both sexes.

Guida de' Comuni e de' Maestri, 2 ed. 1890, pp. 253. Dott. Bruto Amante.

This very digest presents a convenient picture of normal and elementary instruction in Italy from an administrative standpoint, and is greatly needed in the very confused state of educational legislation in Italy. Programs, pensions, buildings, obligatory attendance, inspection etc., are all included.

L'Université de Bruxelles. Notice Historique Faite à la Demande du Conseil D'Administration. Par L. VANDERKINDERE, Professeur a la Faculté de Philosophie et Lettres. Bruxelles, 1884. pp. 216. Annexes pp. CCXVIII.

This historical sketch was made just as the ultramontane crisis was impending on the occasion of the fiftieth anniversary of the University of Brussels, which was founded Nov. 20, 1834. The last 218 pages contain only names of past and present members. among whom are many persons of distinction. The first part is a somewhat dry chronicle of events which derive their chief interest from the prolonged and reiterated struggles of this liberal university, whose motto is progress, with reactionary and catholic influences which centre in the neigboring University of Louvain, probably to-day the highest grade of all catholic educational institutions. To quote a summary and concluding sentence: The University "began its work at an epoch when scientific work had not yet begun in Belgium; the practical utilitarian spirit which is peculiar to the Belgium people did not at once open a field proper to efforts of pure science. But little by little ideas were enlarged, disinterested research began to be loved, and it came to be understood that a nation has no moral grandeur if it cannot make in its heart a place for the love of truth." German professors were imported to enrich the Belgian patrimony, who, not content with preparing men for practical life, made disciples, till now national schools and practical courses have taken root. The history of education in Belgium during the first half of this century is very dark; even the official report of 1853 said, "Scientific life does not exist in Belgium." The object of the catholic university founded at Malines in 1834 had been defined to be to extinguish all doctrines that did not proceed from the apostolic see, and it was to offset this influence that the University of Brussels was founded by the liberal party the same year upon the initiation of the Free Masons led by Verhaegen. Subscriptions were invited and poured in from all the country. In less than two months 459 subscriptions came, amounting in all, however, to only 25,000 francs. The city of Brussels then generously subsidized the nascent university, gave it a building, while the council opened to it all hospitals, collections, public lecture rooms, etc., in the city, and it was placed under control of an administrative council of which but two professors could be members. This was the simple constitution of the first university in Europe due entirely to private initiative. The law could not give it a civil personification. Beside the catholic university which required a solemn and formal profession of catholic faith of every professor, was thus founded an asylum of science, pure, free, independent, where patient, attentive, conscientious research, disengaged from all alien preoccupations and interests, could make permanent conquests of human knowledge. In addition to medicine, law, letters, and science, which existed in the other universities, the council created a fifth faculty of administration and politics. A legal education did not seem sufficient for political leaders. In 1849, 1857, and 1876 important modifications of the organic law were made, establishing private docents, reconstituting examination juries, new chairs, etc. Brief biographical notices of the 200 professors who have held chairs in the university during its existence, and also the names of the original subscribers and founders are given.

Rapport Triennal sur l'Etat de L'Enseignement Moyenen Belgique, présenté aux Chambres Législatives, le 13 Décembre 1886. Onzième Période Triennale 1882, 1883, 1884. Bruxelles, 1887, pp. CLXV and 248.

Since 1850 these reports are presented triennially, and this eleventh report is largely occupied with an account of all the many new measures put in operation by the transforming law of 1881. The next triennial report is now awaited with interest. At the beginning of this period there were 10 ancient royal atheneums, and 12 new ones created by the law of 1881, and three new ones were organized at Ostende, Thuin and Ixelles. Twenty-five are not too many for a growing population of over five million and a half. Besides these there are 85 intermediate schools for boys, 56 for girls, two superior normal schools, and 16 miscellaneous schools, or 164 in all, an increase of just 100 institutions of this class since 1778. In 1884 the pupils of all the atheneums numbered 5,781, and of the intermediate state schools 15,045, the commercial colleges 534, and the patronized schools 902, a slight decrease in all four since 1882. The state middle schools for girls had increased about ten per cent. The number of gratuitous admissions has steadily increased.

The law of 1881 divided the atheneums into four courses: I. Pure humanities with two modern langaages; II. The same with one; III. Makes Greek obligatory only in the first year and is largely scientific; IV. Makes Greek obligatory for two years, but is otherwise mainly industrial and professional. This change permits these conservative institutions to approach the Real schools. Over 1,500 out of 1,900 boys chose the full course of ancient languages,—an illustration of the same *élan et ressort* that led Scotch and English boys, according to the remarkable books of Demogeot and Montuci upon secondary schools in these countries, whenever an hard and an easy course were placed side by side, first to hesitate and then always to choose the harder. The indigenous language of the province, whether Walloon, Flemish, or German, is always not only protected, but favored. The government not only confers degrees, but decorates distinguished professors and teachers as officers and chevaliers of the order of Leopold, and even gives to retiring prefects the right to retain the title of professor, and an old law of 1831 requiring all instructors of higher grade to take an oath of office has been revived and enforced. The government has opened its depots of archives and manuscripts to the rhetoric classes (which include history and literature), and a simple course, which begins with exhibiting bulls, charters, seals, letter patents, etc., has been developed, the stimulating effects of which are made the subject of a report. The department of public works has also in a sense opened its secrets to the select youth of these choice national schools. Teachers' conferences are so carefully prearranged and so well conducted that often the decrees of the king, the orders of the minister and the laws, and the principles and conclusions of these little pedagogic conferences are printed in the government reports. 7,500 francs are distributed as prizes for pupils in complimentary courses, and there are also 17 special prizes. Private institutions may be aided by the state if they accept the government program and submit their rules and books to inspection. The government council selects a list of text books after careful scrutiny, and from this list printed in their report each teacher is free to select. There are two normal schools designed to qualify higher teachers in these schools, that of the humanities at Liège and that of sciences at Gand, and four to fit teachers for the younger classes, at Bruges and Nivelles for young men, and at Liège and Bruxelles for young women.

Rapport Triennal sur la situation de L'Instruction Primaire en Belgique, présenté aux Chambres Législatives le 28 Mars 1889. Par M. DEVOLDER, Ministre de L'Intérieur et de L'Instruction Publique. Quinzième Période Triennale, 1885, 1886, 1887. Bruxelles, 1889, pp. CCXLIX and 762.

This ponderous volume is devoted to the financial, administrative and pedagogic details of primary schools during the preceding period of three years. Statistics of each district and canton are given. Inspection extends to all schools and all branches except to courses in religion and morals. There are special inspectors for middle work and gymnastics. The number of normal schools was reduced in 1866 from 28 to 16. In 1887 there were 8,198 teachers in these schools, all of whom had a full normal training and had taken the teachers' oath required since 1831. There were 4,015 commercial schools and 1,476 others adopted or subsidized by the state. The central council publishes a catalogue of text books approved by them from which the teachers can select, also a list of books admissible for school libraries and which may be given as prizes placed in normal school libraries, and 25 sets of approved maps, charts, etc., for school use. Adult courses, temporary courses in drawing, pedagogic conferences, pensions, widow and orphan funds, etc., present no points of salient interest to those familiar with the systems of France and Germany.

Conseil de Perfectionnement de l'instruction primaire. Bruxelles 1883. pp. 79.

This contains the laws regulating the composition and work of the Belgium council which has charge of primary education. The council was established on its present basis by the law of July 1, 1879, and is composed of six chief inspectors of schools and eight lay members named by the king, each serving three years and re-appointable. The annual meeting is in April. They must examine and approve not only school library books but all text books, and those which may be awarded as prizes, give advice on programs, methods and illustrated apparatus, and on all other matters submitted to them by the minister. They can consider only such books and illustrated apparatus as may be submitted to them by the minister of education, and their reports upon these must be in writing. The expenses of the council are defrayed by the state and they are given a permanent secretary. Their annual report contains a catalogue of approved books, and a full and often interesting and valuable report on programs.

Entwickelung und Gestaltung des Belgischen Volksschulwesens seit 1842. Von Dr. M. Lauer. Berlin, 1885. pp. 194.

By the fundamental law of 1842 the schools of Belgium were placed about equally under the control of the state, the commune and the church. By the law of 1879 the state was made essentially the master of them, the commune given only duties and the church excluded. The law of 1884 entrusted the public schools to the commune, gave the state only the inspection of them and the church the possibilty of co-operation. Normal training was by the law of 1842 the joint work of state and church, by that of 1879 of the state alone, by that of 1889 of the state chiefly, but aided by both province and commune and possibly by the church. This little volume contains only the texts of these three laws, the last of which is much the most detailed and valuable.

Annuaire de l'Université Catholique de Louvain, 1890, pp. 419 and XCVIII.

This voluminous report of what has been called the highest grade Catholic University in the world is full of interest. After the indulgences given its members by the Pope, and the calendar of saints and a prayer to the holy virgin who is the patroness of the University, the personnel of the Episcopal body of Belgium under the archbishop of Malines and of the university comes the report of the heads of the many departments of the university, the scientific and medical departments of which appears very strong and modern. Notable among them is the department of normal training for ecclesiastics who are fitting for secondary teachers, the agricultural and brewery departments. Only Catholic students are admitted, theatre going is forbidden. The vast old college of Alne is now devoted to the American seminary(1861,) which is for those intending to become missionaries in North or South America. A visit to this seat of learning is full of interest, instruction and surprise.

Ministère de l'Instruction Publique. Recueil des Lois et Arrêtes relatifs à l'Enseignement Supérieur. Bruxelles, p. 374.

This is a complete collection of all laws, edicts and decrees in force each year regulating the two state universities of Gand and Liége, covering all the sixty subjects or departments, the appointment and pay of professors and other instructors, special rules for clinics and laboratories, examinations, degrees, discipline, the constitution of the *conseil de perfectionnement de l'enseignement supérieur*, the examination jury, etc.

Ministère de l'Interieur et de l'Instruction Publique. Annuaire statistique de la Belgique. Vingtième année, 1889. Tome XX. p. 365. Bruxelles, 1889.

In the four Belgium universities there were in 1888, 5,860 students, of which Bruxelles had 1,795; Louvain, 1,727; Liége, 1,470, and Gand 838. Since 1890 the student population has increased from 37 to 98 per 100,000 population. School statistics are here presented in only a summary way and occupy but about fifty pages.

Loi du 15 Juin 1881. Appartant des Modifications a la Loi du 1er Juin, 1850, sur l'Enseignement Moyen. Documents et Discussions Parlementaires. Bruxelles, 1882, pp. 354.

This is an history of this important law. The state of intermediate education before is first described, and this is followed by the story of the inceptions and early drafts and later modifications of the law with the parlimentary discussions in full.

Ville de Bruxelles. Rapport fait au Conseil Communal en séance du 7 Octobre, 1889, par le Collége des Bourgemeistre set Echevins en exécution de l'article 70 de la loi du 30 Mars, 1836. Bruxelles, 1889, pp. 275.

This contains a condensed and largely statistical report on the educational institution of the city from the university down, about 50 pages in all.

L'Abeille. Revue Pedagogique pour l'enseignement primaire et l'enseignement moyen du degré inférieur, publiée avec la collaboration de plusieurs hommes d'école.

This monthly journal is now (1891) in its 36th year, and is edited by Th. Braun, state inspector of normal schools. It publishes official announcements, careful digests of the contents of the foreign pedagogic press, in every European country, in both Americas and even Mexico.

Anuario de la Seccion de Instruccion Publica correspondiente a 1889. Santiagó de Chile, Imprenta Nacional, Calle de la Moneda No. 112. 1890. pp. 381.

This report of the minister of justice and public instruction contains official curricula of primary, secondary and normal schools, commissions and instructions of delegates sent to Europe and elsewhere to study special phases of education, new rules for the anatomical museum, medical prosectors and libraries, nominations of a commission to create a physiological institute, members of the national pedagogical congress, of commissioners to perfect the organization of astronomical and meteorological observatories, of new members of the national council of public instructions, diplomatic correspondence to import German professors for the new pedagogical institute at Santiago to train principals and teachers for secondary schools, which already has twelve instructors, the new national library with 28,000 readers in the year, the 29 Lycées, three lower normal schools with a three and four years' course, the 1,097 public schools with a population of two and one-half millions, etc. The university of Santiago is under a council of 14, presided over by the minister of public instruction, and has five faculties, one of laws and political sciences, and one of philosophy humanities and fine arts, in addition to medicine, theology, and physical sciences and mathematics, and in all 151 instructors. The astronomic observatory and the national museum pay their directors five and four thousand dollars per year and have a generous corps of assistants.

Congresso Nacional Pedagójico. Resumen de las Discusiones, Actas i Memorias presentadas al Primer Congreso Pedagójico celebrado en Santiago de Chile en Setiembre de 1889. Publicacion Oficial Dirijida por DON J. ABELARDO NUÑEZ. Santiago de Chile, 1890. pp. 274.

Ten sessions, of a day each, attended by about 170 delegates officials and others from all parts of Chili were devoted to the following subjects, one day each:—Manual labor, reading and writing methods, aid of schools by their alumni, music, military exercises, hygene, how to enforce primary education, country schools, night and adult schools, how to improve the professional training of older teachers. These meetings had unusual point and vitality because several of these subjects were discussed on the basis of a detailed programme drawn up by a committee or by the government, the specifications of which were discussed and amended like a bill in congress, and even where this was not the case the most practical plans were discussed by the essayist with a view to their immediate application in the rapid development of the school system of that country. D. Hurtado's plan of teaching history even in upper grammar grades almost entirely by monographs, biographies, battle-descriptions, each written according to an exact plan, was favorably reported on. The essays are all brief, and usually summarized in a series of theses. The decree of the Junta convoking the meeting specifies not only each subjects but the questions to be discussed or answered under each, the place and length of the sessions, form of publication, etc.

Memoria del Ministro de Justicia e Instruccion Publica, presentada al Congreso Nacional en 1890. Santiago de Chile, 1890. pp. 368.

The pedagogical part of this annual report is made up chiefly of reports from the heads of higher institutions and of statistics of primary education. Considerable space is given to the new medical school and the national conservatory of music and declamation. The progress since the corresponding reports of 1888 and 1889, is commendable. The new observatory which is described at length in the report of 1888, is beautifully located, surrounded by zoölogical and botanical gardens, vineyards and nurseries. This, like each institution, has its organic law. The minister had been largely occupied during the year with the aid of law professors in codifying the laws, especially in making out a criminal code, and in perfecting prison organizations. The admirable compilation entitled *Recopilacion de Leyes y Decretos de Interés General vigentes en 21 de Mayo de 1888. Santiago de Chile 1888.* pp. 806 is soon to be revised.

Revista de Instruccion Primaria. Publicacion Oficial. Destinada al Fomento de la Educacion Popular. Santiago de Chile. Juan Madrid-Casilla 170.

This review of primary education is a monthly journal now in its fifth year, each number contains about sixty pages and is the central organ in Chili. The pedagogics of Tolstoi, religious training, educational journalism, pedagogy, methods in geography, arithmetic, reading, history, normal schools, manual training, psychology as applied to education, the pedagogics of Sarmiento, reports of associations, etc., combine to make the two last numbers before us, admirable models to North American educational journalism in this field. The most noteworthy trait about these articles is their seriousness and the evidence of wide reading and careful study they present. Chili now, with her excellent university and her lower school organization incomplete, is a good illustration of educational influences working from the top downwards.

Etude Geographique, Statisque, Descriptive et Historique des Etats Unis Mexicains, par ANTOINE GARCIA CUBAS. Mexico, 1889. pp. 411.

Nearly all the states in the Mexican confederation have adopted the principle of free and obligatory education. In all thirty of them together there ~~are~~ 10,726 primary schools and over half a million pupils. There are more than twice as many boys as girls; there are 16 secondary schools for girls, 16 preparatory schools, 19 schools of law, 26 seminaries, 9 medical schools, 8 colleges of engineers, 31 Lycées, 1 mining school, 4 schools of fine arts, 2 of agriculture, 2 of commerce, 7 industrial schools, 3 conservatories of music, 1 school for the blind, and 1 for deaf mutes, 1 military college, 2 naval schools, and many normal schools. In all these institutions are 18,500 boys and 2,500 girls. There are 23 libraries, the largest of which has 150,000 volumes.

Estudios Sobre Educacion Moderna. Organizacion de Escuelas Normales por J. ABELARDO NUNEZ. Santiago, 1883, pp. 341.

First part contains chapters on normal schools in Massachusetts, New York, Philadelphia, Germany, Norway, Sweden and Denmark, and a concise account of the international congress at Brussels. The remainder of the book is devoted to studies on moral education, discipline, pedagogy and manual training with a chapter each to industrial and agricultural education, mathematics, physical sciences, reading and writing, geography and history. The influence of Herbert Spencer and of the United States is predominant throughout, and the author's argument on the necessity of a knowledge of reading and writing is unanswerable.

Escuela Normal.

The account of the dedication exercises of the normal school in Santiago, Chili, in 1888 contains a list of laboratory apparatus, and of professional books in its library which may be referred to as a model of what every such institution should contain. Both books and apparatus were maturely selected from the best European sources.

Memoria del Ministro de Justicia culto e Instruccion Publica, presenda al Congreso Nacional en 1886. Santiago de Chile 1886. Imp. Nac.

This report contains the plan of the new normal school of Santiago, a description of the equipment of the new physical laboratory and reports over 900 students in the university, with a steady increase during a series of years, save in the department of law, which still has nearly two-thirds of the total number. In Chili it is thought to be a cause for congratulation that law students are decreasing. We hope soon to have access to later reports.

La Instrüction Publica en Estados Unidos. Ensayors sobre su orijen i estado actual por FRANCISCO GONZALEZ ERRAZURIZ con un prologo de Carlos Walker Martinez. Santiago de Chile 1881. pp. 136.

This book was the result of long and patient study and it gives an excellent bird's eye view of the state of education in the United States from the kindergarten to the university, and shows great familiarity with our best writers, and important tendencies.

Pedagogicheskiy Mozey Voenno-uchebnüh zavedeniy, 1888-9, and 1889-90.

These two impressive volumes in the Russian language are the 20th and 21st annual reports of the pedagogical museum of St. Petersburg, edited by Vs. Kohovskey. This museum, now in the 28th year of its existence, reports during the past year 109 conferences, 58 lectures for soldiers and the common people, 14,000 persons making use of its collections and material, 161 popular classes in sacred music, and elementary training, one exposition of children's toys and games, and 120,000 visitors, of whom 21,312 paid admission. Its reports of conferences and other meetings, of pedagogic researches, and its digests and criticisms embrace such points as text books and all school supplies, systems of illumination and ventilation, and hygiene, discipline, fatigue and overpressure, writing and drawing, tobacco, children's food, primers, etc. These subjects are commonly treated by men of the highest ability and accomplishment. As favorable illustrations of the thorough way which the museum inspires and directs we mention the prolonged studies of fatigue in school children begun in 1877 and now in that most interesting stage when, in the words of Gorinevskiy, it is at last fully realized in Russia that this subject must be subjected to a yet far more thorough discussion if the grave errors of occidental nations are to be avoided. Of this work very little save the studies of Sikorskiy have been translated into west European languages. This work has been carried on by

Madame M. Manasiena, and especially by Prof. P. A. Litvinskiy, Galanin and others. Litvinskiy studied the social amusements of children. One-third of the 24 hours of most children is unoccupied, he premises, save by amusements. On the basis of an extensive study of the plays and games of children he divides their recreation into eight classes and assigns each its place according to age, health, and educational end attained. It is bad for children to play with adults. The sports of the common people are, as a rule, not helpful for them. Perhaps his most important conclusion is that the value of amusement is in general inversely as the number of participants. The school has a larger choice of recreations than the school festival, and the family larger than the school. Family allows more room for personal, iniative, and more liberty of frequent change so that there is less danger of over-excitement and abandon in playing. There should never be prizes for games. Chums, and close companionship with a few,rather than crowds, should be the rule; plays are grouped as follows: those for children less than eight years of age, those for from eight to 15, and from 15 to 21. Nervous and physical debility,said Galanin, are now growing from generation to generation, and complex as are its causes, one of the chief is doubtless over-fatigue in school. Methods, not programs, make school-work hard. If the near sighted, headachey children, and those who lose in school the habit of deep breathing were dropped, and if children were not over-fed to the point of confirmed indigestion and far beyond their needs for mental development, most of this evil would cease. One specific problem now under investigation is which class of schools and which grades fatigue most. The method is complex and seems well adapted to the end. It consists in general of collections of 100 words each, and each set of these collections adapted to one of the seven grades of schools. In general, fatigue is inversely as ability. In intermediate schools one grave error is that many pupils reach them too poorly prepared to follow the courses readily. To mitigate this evil a society for gratuitous tutoring has been organized in connection with the pedagogic museum, which aids such backward students wherever the museum will provide rooms and the necessary books. The toy exposition held last year attracted, says A. A. Ysaev, collections of over a million rubles value. It had long been planned, but only when the manufacturers rather than sellers of toys were appealed to was its organization effected. Native Russian toys which are admirable in pedagogic quality represented a large industry that was threatened by a growing fashionable preference for prints and French and other foreign toys.

The late Professors Kedrov and since, Demeankov and Tarkhanov have elaborated a comprehensive plan for gathering statistics as to the present and subsequent effect of school life upon health, incited thereto by the two international pedagogic conferences thereon in Brussels in 1876 and 1880. These statistics should be on a plan internationally approved and be exchanged for mutual benefit. Professor Zelenskiy insists that mind is an organism like the brain, only its chief development comes after the brain stops growing. So it is not a function of brain. He deprecated the tendency to separate or contrast mind and matter. Like organism, conscious mind has its natural history, its periods of growth and decay, its diseases, etc. Education is movement. Stillness in school stultifies.

In an article on discipline it is said that interest in school work should be the means of all discipline. Only as interest declines does discipline become apparent. Both discipline and teaching may be excellent, yet entirely without education. monotony and tedium is the cause of most offences against school order. *Per se*, discipline has no educational value whatever.

Mlle. Valitzka, and later Dr. Virenius published in the museum archives a valuable study of the effects of tobacco on the organism of young children.

Since 1714 the orthodox clergy of the national Greek church have had practical control of religious education in primary schools. These orders of Peter the Great were modified in 1803, 1878, 1864, '74 and '84. Now it is urged that the entire control of primary schools be given up to the clergy, and that parochial bodies and often church buildings be the centre of all, and that the government concentrate all the care upon intermediate, special and advanced schools. The government has given the clergy great power already, and seems inclined to regard them as the natural teachers of children and the people. Theoretically in most provinces the clergy can now teach all, and the priest may transfer his right to others but must oversee and attend examinations. A proposition has just been made to teach church history before forms and services of the church, and make the catechism the crown of religious teaching and restrict the latter to one year. Against this it is urged that two years is hardly sufficient for the latter, and that knowledge of church services should not be left to higher grades while some would exclude all religious instruction from schools and have it given in the church.

A valuable article by P. Th. Kapterer, (suggested possibly by Hauffe Entwicklungs geschichte des menschlichen Geistes '78), distinguishes between qualities like credulity, idealism, self-confidence, timidity, extreme idealism, etc., which are outgrown in children and perhaps entirely lost, and others like comparison, curiosity, criticism, etc., which develop and are abiding. If the culture of the first is neglected, the energy of life is lowered and it is monotonous. If children die young they lose the pleasure they have a right to, and they are less happy in old age. If abiding qualities are neglected there is lack of discipline and strength. Precocity, especially in the knowledge of good and evil, brings disenchantment and apathy. A good education balances the needs of the present and the future.

A program of the professional course in pedagogy in the royal normal college connected with the museum in St. Petersburg may be abridged as follows: A. *Physical.* I, air, its analysis, windows, dust, breathing, ventilation, etc. II, heating, stoves, fire-places, steam, normal temperature, etc. III, humidity; IV, light; V, privies; VI, school diseases; VII, school furniture. B. *Psychology:*—The nervous system, attention, feeling, habit and custom, memory, imagination, conception and imagery, senses, anger and kindness, fear, content, will and discipline, love and disgust, ennui. C. *Didactics:* branches taught and methods. D. History of Education, with special emphasis on chivalry, Montagne, Ratisch, pietism, LaSalle, Fellenberg, Rousseau, Pestalozzi and Diesterweg.

Educational Maps of Russia.

The largest map published by the Minister of Education in 1876 in four large sheets has not been superseded. Each of the hundreds of sub-departments or counties, including the 16 Siberian districts, is distinguished by 14 shades and colors, according to the number of inhabitants to each child actually in school, between the extreme of one in four to one in 1458. About the Black Sea and in the western section, especially in Poland, and even in Finland, the proportion is best, ranging from one in 20 to one in 45 to 60, but in the mountains, in the central and northern and eastern parts the proportion is very small, from two to four or five hundred being not uncommon. Russia has improved greatly since this map was issued, but the difficulties of very sparse population, and the resistance of many half-barbarous and rebellious tribes are by no means overcome. The same map shows also the total number of primary government and non-government schools, the cost per school and per pupil of the latter. The whole is a model of lucidity.

The other smaller map (1 metre square) published in the same year, shows the higher and middle institutions under the ministry of education, and unlike the first, has been translated into German. Between 1866 and 1876 the number of universities and other higher institutions increased from 8 to 18, and of intermediate institutions of all kinds from 272 to 540. In Siberia the number of these institutions had increased in this period from 12 to 32. Peculiar to Russia are the Tartar at Kason and Ufa and Hebrew teachers' seminaries, and jurisprudential lyceums for those who wish the inferior examination in law institutes, for living oriental languages, and historic philological institutes.

Verslag van den Staat der Hooge, Middelbare en Lagere Scholen in het Koninkrijk der Nederlanden, over 1888-89. 's Gravenhage, 1890, pp. 458.

This is one of the most systematic and complete of reports, and covers the entire field of higher and intermediate instruction with maps, graphic and colored charts and statistical tables collected and arranged according to the best methods of statistical science. In all these respects it may be commended as a model to our Bureau of Education. Between 1857 and 1862 the Dutch communes nearly trebled their outlay for high schools, and although the government increased its contributions in nearly the same proportions as late as 1878 it gave but 1,030,000 florins out of a total of 7,073,000. For the next five years the state increased its subventions till in 1883 they reached 6,623,000 out of a total of over 15 million florins. Nearly all the communal increase since 1876 that has not later fallen off, was made at two rapid strides in 1882 and '83. In 1888 the communes paid nearly seven out of a total of over 11 and one-fourth millions. In the twenty years ending 1888 the total number of pupils of both sexes in all these institutions, public and private, had increased from 380,000 to 635,000, and the increase in the special, has been greater than in the public schools, and is due much more to girls than boys. A map of illiteracy for each of the *circa* 100 school *arrondissements* show in three outlying districts over 20 per cent. of the population unable both to read and write according to the severe tests of the Dutch law. Concerning each of the universities, Leiden, Utrecht, Groningen and the new institution at Amsterdam, the information is no less complete than concerning gymnasia, progymnasia, higher normal, burger, industrial, and other secondary schools. Not only the number of students in each of the five faculties of each university, but the lecture fees and the length of time each has spent at the university—sometimes eight or ten or even more years—are recorded. The largest number of students in each university is in medicine, and law comes next, far leading all others save at Groningen. In all Leiden had in 1888, 744, Utrecht 569, and Groningen 383 students. Each course announced or given in 1888, the examinations undertaken, those passed, degrees, fees, brief notes concerning each laboratory, prizes, etc., are all given due space, but the university budgets are not here detailed, as they are in the case of the thirty-five gymnasia, progymnasia, the sixty-one higher burger schools, etc., with, for the most part, a five year course.

Annario Estadistico de Instruccion Publica 1889, Madrid, 1890, pp. 409.

Spain is divided into ten university districts, in each of which is an university which is the center of its educational system. These are Madrid, Barcelona, Granada, Oviedo, Salamanca, Santiago, Sevilla, Valencia, Valladolid and Zaragoza. At the head of all these is the Minister of Public Instruction Excmo. Sr. D. José Alvarez de Toledo y Acuña. Conde de Xiquena; under him is the Director General, Ilmo, Sr. D. Vincente Santamaria de Parades, and under him six administrative officers, each in charge of universities, institutes, fine arts, libraries and museums, middle and primary instruction. A national council of education consisting of 36 members has general advisory functions, not unlike the general council in France. The Royal Spanish Academy, and the Royal Academy of History, the R. A. of Fine Arts, of Exact Sciences, of Moral and Political Sciences, and of Medicine, are all well organized and present an impressive array of names and titles. The university districts are organized with 59 institutes, and 480 incorporated colleges, besides normal—48 for women and 34 for men—and lower schools on a plan not very unlike the system of France. The expense of the public education in all 10 of the university districts combined is nearly two million dollars, of which nearly half is supplied by the state. In the 10 universities there are 38 faculties, fitting for 28 careers, besides 30 professional and 19 special schools. The public schools number altogether 24,703. In the higher education 31,079 students are enrolled; in all kinds of professional schools 86,152; in all secondary schools 70,000.

Memoria Presentada al Congreso National de 1890. Buenos Ayres, 1890, Three vols., pp. 454, 597 and 536, by DR. D. AMANCIO ALCORTA.

These voluminous pages contain the education laws, decrees and edicts relating to justice and public instruction. The regulations of each of the 17 national colleges, and over 20 normal schools representing secondary education, and finally of the university and special schools of high grade are described.

El Real Colegio de San Ignacio de Loyola vulgarmente Colegio de las Vizainas en la Actualidad Collegio de La Paz. Resena Historica Escrita por Enrique de Olavarria y Ferrari e impresa por acuerdo y con la aprobacion de su junta directiva. Mexico, 1889, pp. 244; appendix pp. 130.

This is a history of one of the most important catholic colleges of Mexico. The corner stone was laid in 1734. Its architecture and its beautiful church and court are medieval and cloisteral in form.

Recherches sur les mouvements chez quelques jeunes enfants. BINET. Revue philos., Mars, 1890.

La perception des longueurs et des nombres chez quelques petits enfants. BINET. Revue philos., Juillet, 1890.

Perception des enfants. BINET. Revue philos., Décembre, 1890.

In these three papers (see fuller review of the first in the *American Journal of Psychology*, vol. III, p. 273) Binet reports experiments and observations upon a number of children, but chiefly upon two little girls, sisters, one between two and three years old, the other between four and five. The first paper shows that the first movements of walking are instinctive and not acquired by imitation; that spontaneous movements in very young children are almost exclusively bi-lateral (both members being moved at the same time, or first one and then the other); that the motions of children are less rapid and less abrupt than those of adults; that there is a suggestive resemblance between some automatic actions of children and the automatism of double personality cases.

By the experiments reported in the last two papers the author found that the skill of children in comparing the length of lines is great; that their ability to recognize number before they can count above three does not extend beyond five or six; that they connect the color red with its name before other colors (these experiments should be compared with those of Preyer and Wolfe, mentioned above in the note on Studies of Language of Children); that they easily see the significance of pictures representing known objects in their totality, but not that of representations of parts of known objects, (the same is true with the recognition of emotion in pictured faces except apparently for laughing and crying, in both cases because the child is unable to analyze his perceperceptions); that the backwardness of the child in using personal pronouns is not wholly a matter of imitation but partly due to real lack of a discrimination of his personality; that at four years and a half a little girl can give some account of her dreams, and does not wholly confuse them with reality; and lastly that in replying to questions (e. g., "What is a knife?" "What is a box?" etc..) the child is most attentive to the use of the thing, and, in the case of physical sensations like hunger and thirst, to the means of satisfying them.

The papers present many interesting details, but perhaps their chief merit is that they represent an attempt to substitute experiment for casual observation in a field where experiment has as yet been little employed. E. C. S.

Uber Geistesstörungen in der Schule. Ein Vortrag nebst 13 Krankenbildern. By CH. UFER. Wiesbaden, 1891.

The pamphlet begins with an historical sketch of the development of psychiatry of children, mentioning particularly Griesinger, West, Güntz, Conolly and Emminghaus. Is it necessary for the pedagogue to learn something of child insanity? Pathology is simply physiology of the sick, said Wunderlich. Nay, still closer is the relation: physiology is the science of both healthy and sick, sickness being only a condition not so common as what is called health. This connection is most of all apparent in the case of the mind. Without going so far as, with Lombroso, to identify genius and insanity, we can readily understand that they are both abnormal conditions of mind. Between the normal operations of the mind and the phenomena of idiocy, insanity, mania, etc., there are continuous and gradual transitions. A person who is familiar with asylums can detect at once the faint symptoms of unsoundness of mind in children, whereas others would never notice them. By far the larger part of mental disturbance in children is due to bodily complaints; a good proportion of these can be cured, whereas, if left unattended to, cases of incurable disease will arise. Just these cases are never taken to the physician until too late; the parents are ignorant or blind; the whole depends on the intelligence and education of the teacher. Some children are all right so long as little effort is required and go to pieces under strain. Others try to work but are unable to prevent vacancy, staring and mind wandering. Some are sensitive, obstinate, tearful, explosive in anger, hard-hearted to other children or animals, or go to the exact by opposite extreme. Some are inert, and others mercurial, restless, ever active but purposeless. One boy cited, if he hit a stone must hit it twice again, and if he made a blot he must make two more, or if he spelled a word wrongly must mispell two more before he could correct it, and was unable to repress these imperative impulses, which impel others to shout out bad words despite the strongest wish not to do so. Such cases must not be confused with laziness, or obstinacy, nor must morbidly sensitive children be made weak minded by overriding their feelings. The cases given are very interesting and instructing. The rudiments of morbid psychology must be taught to teachers. Colleges and normal schools should substitute in the place of the current college philosophical mythology (as worthy the name of science as alchemy is to be called chemistry) a substantial laboratory course in experimental and observational psychology. Every teacher should have had such a course in the psychological and neurological side of these studies, and should know something of the typical forms of mental and nervous diseases, especially in children. Stated visits to a paediatric clinic would do him no harm. Nothing can be trusted to the parent, and the fate of such border-line cases often lies entirely in the hands of the teacher. SCRIPTURE.

A Report on the Examination of 100 Brains of Feeble-minded Children, by A. W. WILMARTH, M. D., Alienist and Neurologist, Oct. 1890.

The 100 cases are summarized: Sclerosis, 25; degenerative changes, not true sclerosis, 15; hydrocephalic, 5; general cerebral atrophy, 2; non-development, 16; infantile hemorrhage, 1; adhesion of membranes from old meningitis, 3; of 31 cases where actual disease or imperfect development of the brain proper was not demonstated, there was hypertrophy of skull, 6; acute softening, 2; demi-microcephalic, 2. Attention is called to the large number of cases of actual cerebral disease, in contrast with the relatively small number where imperfect development is the cause of mental defect, and to the improbability of most of these cases ever attaining a full mental development, though many can be greatly improved. Children inheriting inactive brains from parents below the usual average of intelligence, without history of infantile disease or epilepsy, seem the most promising of general and permanent improvement.

The Growth of Children. GEO. W. PECKHAM, M. D., Teacher of Biology, Milwaukee High School. Report of Wisconsin Board of Health, 1881. pp. 28–73.

The investigation was undertaken in the schools of Milwaukee, under the auspices of the State Board of Health. The data were similar to those obtained by the Mass. Board of Health. The measuring and weighing were done under the direction of the principals of the schools. Observations were made on over 5,000 boys and 5,000 girls. The results are given in a dozen charts of curves and twenty pages of statistical tables. Dr. Peckham prefers averages to means.

1. Comparative rate of growth of the two sexes: Boys are taller until the twelfth year, and heavier until the thirteenth; between thirteen and fifteen the girls are both taller and heavier; after the age of fifteen the boys excel the girls in weight and stature; girls nearly cease to grow at about seventeen years of age. 2. Race, as affecting height and weight: The American boy or girl is taller than the German or Irish; the German has a slight advantage in weight; the rate of growth of Germans is markedly modified by residence in this country through one generation; in inter-marriage between Americans and Germans the offspring seem to take the height of the taller parent. 3. Effect of climate and density of population: School children in Milwaukee are taller than school children in Boston; the weight of boys in Milwaukee is greater than that of boys in Boston; the Boston girls are slightly heavier than Milwaukee girls. Dr. Peckham quotes Baxter's tables to show that climate does not influence height except as it affects food and mode of life, and ascribes the superiority of the Milwaukee children as compared with the Boston children to the degree of density of population in Milwaukee as compared with Boston. He concludes that the height of American-born men, as shown by his tables, is apparently more modified by the conditions accompanying density than by all other influences, race excepted; urban life as compared with rural life tending toward a decrease of stature. The forces here referred to act at all ages from five years upward. 4. The rate of the growth of the body and the lower extremities: The length of the body of the girl is less than that of the body of the boy until the tenth year, and thereafter greater until the sixteenth; from fifteen to eighteen the bodies of girls grow only two inches, and the bodies of boys over four; for the lower extremities, at nine years those of the girl are longer, at eleven shorter, and from eleven to fourteen again longer; at fourteen the lower extremities of the girls almost cease growing, while those of the boys increase by four inches between the ages of fourteen and nineteen. 5. The table of yearly and half-yearly increments in height and weight shows an excess in growth during the six months from May 1 to Nov. 1, either the long vacation or the season of the year being favorable to a more rapid increase in height and a striking increase in weight.

REIGART.

The Counting-out Rhymes of Children. H. C. BOLTON, Jour. Am. Folk-Lore, April and June, 1888.

Mr. Bolton has collected 460 of these rhymes in use in England and America, and 900 used in various countries. Of One-ery, two-ery, ickery, Ann, etc., he has counted 30 variations. Ena, mena, mina, mo, etc., is the favorite among American children. The writer holds that the practice is a survival of the incantations of sorcery.

FOREIGN MISCELLANIES.

The Paris medical supervision of schools under the law of 1884 now in force divides the city schools into groups of 15–20 rooms each, and redistricts every three years. School physicians named for three years by the mayor and appointed by the department prefect are assigned one of these groups each at an annual salary of $150 each. They must inspect twice a month and note in a book kept in the school their observations and suggestions. Not only are out-houses, ventilation, light, etc., inspected, but each child must be examined (as to eyes, ears and teeth once a month) with reference to symptoms of disease. A sick child cannot return to school without his certificate. About 130 physicians are thus employed in Paris, and since 1887 this system has been obligatory for all schools in France. Havre founded a free public dispensary for children , other cities followed and now Paris has the matter under consideration.

Careful medical studies of school children in Berlin by aurists showed that 25 per cent. had more or less defective hearing, most of them were thought to be deaf enough to be incommoded in their work. Such partially deaf children are often thought unjustly by their teacher to be inattentive. More effort of attention is needed by such children who were usually utterly incredulous concerning their defect, although they often complained that the teacher spoke too low or indistinctly. Children from better homes were less often defective than those from squalid ones.

The moral section of the Royal Statistical Bureau in Berlin finds that 289 pupils committed suicide in Prussia between 1883 and 1888. The proportion of pupils in elementary to secondary schools was nearly three to one, and of boys to girls nearly five to one. The cause, usually hard to find, is unknown in 86 of these cases. Fear of punishment is the chief of the 16 causes tabulated, and then follow in order fear of failure in examination, discouragement, melancholy, hard treatment, moral depravity, spite. Half of the girl suicides were due to fear of punishment.

The French physicians Dally and Chassaque have published statistics of the effects of five months courses of gymnastics upon the physical development as follows: The chest of 76 out of 100 men increased 2½ centimeters in circumference. Thirty-two increased 1.28 cm. in the circumference of the upper arm; 62 men, 57 cm. in lower arm; 63 men, 1.38 cm. in thigh; 36 men, 82 cm. in calf, etc. The lifting power increased 56 pounds in an average based on 86 men out of 100, and the gripping power 19½ pounds. Total weight however decreases at an average on 63 men of $14\frac{7}{10}$ pounds each.

Esquirol called attention to the fact that idiots without the power of speech could sing. Dr. Wildermuth of Stettin, in Jour. of Mental Diseases, Mar. 1890, compared 180 idiotic children with 80 normal children in regard to vocal range, sense of harmony, and memory for melody;

27 per cent. of the idiots and 60 per cent. of the normal children were classed as musical in the highest degree, 11 per cent. of the idiots and 2 per cent. of the normal children were without musical ability. This remarkable relative development of the musical sense in idiots is the more striking as there is no evidence of any other artistic taste. The practical outcome of Wildermuth's observations is to emphasize the necessity of vocal culture in the training of idiots.

Dr. Cullere in an article on arithmomania in the same Journal records several cases of epileptics who have a mania for counting, particularly for calculating divisions of time—seconds, minutes, hours, etc. This mania for calculation differs materially from similar mania in those of inherited mental instability; the latter are pained and fatigued by arithmetical calculation; to the epileptic calculation is an amusement.

Dr. S. V. Clevenger, Alienist and Neurologist, July 1890, describes an infant prodigy, Oscar Moore. Two little colored children were reciting the multiplication table at their home, in a little cabin in Texas, as they had repeatedly done before, and one of them asserted that four times twelve was fifty-eight, whereupon a thirteen-months old baby, Oscar Moore, who had never spoken before, corrected the error by exclaiming, 'Four times twelve are forty-eight!' There was consternation in that humble home until the family became reconciled to the freak. Oscar was born in Waco, Texas in 1885; his father is an emancipated slave, his mother is a mulatto. He was born blind; the other senses are unusually acute; his memory is the most remarkable peculiarity. He is intelligent and manifests great inquisitiveness: his memory is not parrot-like. When less than two years of age he would recite all he heard his sister read while conning her lessons. He sings songs and counts in different languages, has mastered an appalling array of statistics, is greatly attracted by music. The writer concludes that Oscar is not mentally defective, but may possess extraordinary mental powers.

Dr. Jones finds the mouth the frequent cause of backwardness in children. (Jour. Mental Science, 1890, p. 187.) This is often seen in the Mongol or Kalmuck type of child. Irregular teeth that do not squarely meet, or jaws that do not coincide, etc., are commonly a cause and sign of palatal deformity. SCRIPTURE.

Hadden records several children with very defective articulation who were nearly normalized by careful individual instruction. Such cases have normal mouth, nose, and teeth, and can perhaps pronounce all the sounds separately, but fail in combining them. He thinks labials, linguals, gutterals, is the order of acquiring, and that the co-ordinating centre often needs a jog. SCRIPTURE.

Bresgen, in a recent pamphlet in Germany, calls attention to the frequent defects in the nasal cavities of children and the mental defects often associated with them. Imperfect power of nose breathing not only weakens and interferes with the proper development of chest and lungs, but causes frontal headache and especially inability of attending called *aprosekia*. Several typical cases are given where operation on the conchae produced a marked increase of mental power, and the effort of attention no longer caused headache and dizziness. Cases occur where children have been thought to be dullards who would have been greatly brightened by a simple operation. Every child should be occasionally inspected by a physician. SCRIPTURE.

Compayrè contributes a valuable article to the Revue Pedagogique, July, 1890, upon the development of the moral sense in children. It is, however, based largely upon Preyer, Darwin and Perez. The normal evolution of this sense is hard to determine it is so modified by external influences, but it is rooted in pleasure and pain. Fear is the lowest and first external incentive. The good is what is permitted, the evil what is forbidden. The dislike of punishment is slowly transferred to the fault. Next good is what pleases and bad what displeases those the child loves. The idea of general good and bad is a product of long abstractions. Virtuous acts generate the moral sense. The sense of obligation arises from doing duty. REIGART.

Lagrange, in his book entitled Physiology of Bodily Exercise, first states the physiological facts bearing on bodily exercise. The latter excites like champagne, sometimes almost to intoxication. The chemical products of fatigue, if injected into a fresh muscle, cause fatigue in the latter. Nervous patients should indulge in exercises that require the minimum of cerebral control. Overworked children and adults are more vulnerable to all diseases. They will not be aided by physical exercises in addition to their excessive mental efforts. The latter must be decreased to make room for the former. Overworked people should engage in only those exercises that are performed automatically. Many physical exercises are deforming, and others are developing. Rhythmic exercises are preferred. BOLTON.

Prof. Baldwin (Science, Feb. 27, 1891) inquires how far psychic-suggestions influence infants during the first year. First to appear are physiological suggestions, *e. g.*, position on the face and patting the spine suggested sleep. Next came sensori-motor suggestions. The food bottle suggested motion towards it, the mother's face, a smile, etc. There is no association or idea of the reaction. Third is what he calls deliberative-suggestion. There is no full deliberation, but co-ordinate stimuli meet, affront, oppose and further each other. Last is imitation, first seen in the eighth month. Imitation is simple or persistent. Persistent imitation marks the transition from suggestion to will. "The essential thing in imitation, over and above simple idea-motor suggestion, is that *the stimulus starts a nervous process which tends to reproduce both the stimulus and the process again.*"

In an article entitled *La memoire verbale et le savoir de mots chez les enfants*, Revue Pédagogique, Jan., 1890, A. Martin urges that since verbal memory is strong in children it should be made use of in teaching the sciences, history, etc. We have gone too far in opposing and suspecting memory. Technical terms, dates, appropriate and exact phrasiology are not empty words. Ideas are learned with words, at least in part, and in a pregnant, nuclear way. Learning by heart accurate statements of knowledge fully or even in part grasped is the best means of fixing knowledge. Suggestive remarks follow upon how far children understand the scope of words they use at first.

Dr. Beach (Am. Jour. of Insanity, July) infers from a study of about 100 imbeciles that the more common causes are fright, anxiety and worry of mother during pregnancy, epilepsy and insanity, and especially pulmonary troubles.

Dr. W. B. Hadden (Jour. of Mental Science, Jan., 1891) thinks defective articulation in children frequently due not to conditions of the organs of speech, but to cerebral centers. Isolation, prohibition of signs, and the same oral methods as with deaf mutes are advised.

In a paper on the relation between growth and disease, Prof. H. P. Bowditch urges that many diseases have as their first symptoms a progressive loss of weight. The latter is not always a precurser of actual disease, but a symptom that often precedes all others by quite an interval. This "danger signal" enables the earlier use of preventative medicine. Very rapid growth seems to increase vulnerability for certain forms of disease. The first menstruation of country girls is more often in the spring than in any other season, so great is the influence of climatic processes upon nutrition. Locality seems to exert a surprising influence upon growth.

The "London School Dinners Association" supplies a mid-day meal to poor school children, under the direct supervision of the teachers in the elementary schools. The average cost of each meal last year amounted to a little less than a penny. The secretary of the society is Marie Winkfield, 19 Surry St., Strand.

In a recent pamphlet on school excursions from large cities, H. Wendt says: The richer the home sphere of the child, the more manifold and clear his ideas of the objects therein, so much the greater is his capacity for culture. Excursions are valuable for (I) instruction, (II) discipline. 1. In geography the best point of departure is the home region. 2. History should be connected with observation of places and occupations. 3. In Natural History it is important to see the individual objects as members of an organic whole. 4. For language lessons the excursion supplies the best materials. 5. Arithmetic, geometry and drawing may be made more attractive. II. Discipline is improved by the greater attachment for the teacher and by the interest aroused.

In the hope of throwing light upon the question of nativism *vs.* empiricism, E. Raehlmann (*Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, Band II, Heft 1 u. 2.) has studied the development of perceptions of sight in children and those born blind and restored to sight. As especially important for this development two epochs may be distinguished, the fifth week and the fifth month after birth. On an average during the fifth week of life arises the ability to fixate an object placed in the direction of the sight-line. At the same time the eye-movements are regulated, and associated side-movements and the raising and lowering of the sight-line occur. Movements to fixate objects on the periphery of the field of vision are entirely lacking at this period. The retinal images of such objects are worthless to the child's perception. In corroboration of this is the fact that when an object quickly approaches the eye from the side of the field of vision the reflex of closing the lids does not occur; but at this time the same reflex does occur if the object approaches in the line of direct vision. Finally, at this period are developed the coördination between the ball of the eye and the lid and the accommodative reaction of the pupil. The second period, the fifth month, serves especially for developing the power of orientation in the field of vision. About this time appear the first real look-movements, which shift the sight-line in space. The look is turned to the side in order to bring an image on the periphery of the retina to the *macula lutea*, the center of clearest vision. Second, the reflex of closing the lids when an object approaches from the periphery of the field of vision appears. Third, at this time occur the first attempts at touch under the control of the eye, associating tactile sensations with those of sight. The first four or five months of life serve for the acquisition of those sense-impressions which have a reflex influence on the organ. Thus by experience atypical movements are gradually excluded, and only those persist which best serve for the accurate coördination of the two retinæ. The author further adduces observations upon persons born blind and restored to sight in support of his empirical theory.

W. H. B.

Die psychischen Störungen des Kindesalter, von Dr. H. Emminghaus. (Tübingen, 1887, pp. 293.) fills a gap in psychiatric literature and also brings its contribution to pedagogy. After an historical sketch the author discusses the aetiology, symptomatology, and therapeutics of the various forms of mental alienation in children. He has collected and studied a large number of cases, and adds valuable bibliographical notes. A brief review can give little idea of the richness of contents of this valuable book. W. H. B.

Miss L. J. Sanderson has been very successful in educating the feeble minded, and has used many effective methods in making the punishment fit the offense. For one it is pain to sit in a corner with a paper cap on bearing the words "bad boy," while another who is full of soldierly ideals likes it. To stand in the centre of a chalk circle for 15 minutes; to have a towel over his face because the teacher does not like to see the face of naughty children; for a boy who would run away to wear a girl's dress for a time; to take away the little pot-plant each child has; to be taken from the "try" club and put into the "can't" club; to be put on to the "naughty" seat; not to be allowed to don the best clothes on visitors' day, are some of the effective stimuli to good conduct. The whole class is stimulated by the teacher's promise to wear a bright pretty gown of which the children are fond, while to wear their own best clothes is a powerful stimulus. A German boy who had once seen the Kaiser was good as long as his picture was hung near him on the wall, but when the Emperor died fell from grace till he was put under the eye of a picture of Bismark.

According to a recent report of the hygienic inspectors of Berlin about 90 per cent. of the girls in the higher educational institutions of that city are lopsided, or have some degree of lateral curvature of the spine. Carrying the "school bag" weighing 8 to 9 pounds in the same hand is thought to be one cause.

A recent medical examination of 809 pupils in East End, London, showed that 351 suffered from nervous debility, 189 from insufficient nutrition, 149 from eye troubles, 231 were feeble minded and had cranial malformation.

Prof. Foester, the well known oculist in Berlin, thinks that in 300 cases he has traced eye troubles in children to the habit of wearing too tight collars—an affectation children of a certain age are often prone to.

The impurities under the finger nails of school children have been examined in Vienna; and in 78 subjects 38 species of spherical bacteria were found, 18 species of fungi and other disease-breeding organisms.

The London school board estimated that 43,000 children, or 12 per cent. of the average attendance, habitually come to school in need of food. The free dinner agencies are not adequate to the need.

UNIVERSITIES IN EUROPE.

Nation.	No. of Universities.	No. of Professors.	No. of Students.
Norway,	1	46	880
France,	1	180	9,300
Belgium,	4	88	2,400
Holland,	4	80	1,600
Portugal,	1	40	1,300
Italy,	17	600	11,140
Sweden,	2	173	1,010
Switzerland,	3	90	200
Russia,	8	582	6,900
Denmark,	1	40	1,400
Austria,	10	1,810	13,600
Spain,	10	380	16,200
Germany,	21	1,020	25,084
Great Britain,	11	334	13,400

By the school law of 1857 in Holland, all religious confessions were alike respected, but hours were set apart when children could go to other rooms provided by the government for religious training. Any teacher who did or suffered anything contrary to the different creeds was suspended for a year. The state subsidized schools by paying 30 per cent. of the cost, and remitted fees to the poor. The state supervision is through circuit, assisted by local inspectors. Attendance is encouraged, not compelled. Protestants always objected to this law as causing negation of religion under guise of secularity. By combining with catholics the new reform school law of 1890 came to pass. Under this new law all schools, private, parochial, or public, are aided, and parochial schools are left free. Thus state schools are weakened and their fees increased.

Prof. Fritz Schultze, of the Royal Polytechnicum, Dresden, conducted last winter a course of popular lectures on pedagogy for women. The attendance was comparatively large. His success is an indication that even in Germany, women feel the need of theoretical and practical instruction in the science and art of education in order properly to fulfil their duties as mothers, and are willing to go to some trouble to obtain that instruction. Prof. Schultze himself *lays more stress upon the pedagogical education of women than upon that of teachers.* These lectures were not a mere repetition of empirical maxims for bringing up children, but a scientific study, based upon psychological grounds. Such pedagogical classes for women should become more numerous, not only in Germany, especially more in the United States. The women would attend if leaders and teachers properly qualified for the work were at hand.

In Italy 37,000 elementary schools were established in the twenty years ending 1889. In 1887 the government, which had enforced attendance for 10 years, passed a new law. School fees are abolished, and every child must attend till he passes a certain examination and receives a diploma. Both the school year and week are short. Corporal punishment is abolished; salaries are based on population; singing is chiefly solo and not concert singing. The moral certificate of teachers covers three years, and all before that is committed to oblivion. The sexes have different rooms and always teachers of their own sex, and many continuation schools carry volunteer pupils beyond the easy requirements of the law.

The attendance at normal schools has decreased recently in Prussia. The state pays $150 per year per student. Within the eight years ending 1886 only 4,120 new teachers were engaged in Prussia, which has about 75,000 teachers. About 600 of the new teachers were for new schools. If no school room had more than 50 pupils 31,299 additional teachers would be needed. Seventy or eighty to one teacher is not rare, and occasionally there are 200.

PER CENT. OF SCHOOL POPULATION TO THE ENTIRE POPULATION.—Canada, 21.5; United States, 20.58; Cape Colony, 23; Australia, 18; Tasmania, 12; New Zealand, 19; Great Britain, 16.2; Prussia, 18.25; France, 14.64; Austria, 12; Hungary, 11; Italy, 9; Belgium, 10; Holland, 14; Switzerland, 15; Japan, 9; Russia, 1.8; Jamaica, 11; Trinidad, 9; Costa Rica, 7; Guatemala, 3; Nicaragua, 5; Argentine, 6.5; Chili, 3; Equador, 2; Uruguay, 5; Venezuela, 5; Hawaii, 11. Based on reports of 1886–7.

TEACHERS' PENSIONS.—Pensions are paid to teachers in Germany, Austria, Hungary, Switzerland, France, Italy, Denmark, Sweden, Norway, and Russia. In Germany 25 per cent. of salary after 20 years service, 50 per cent. after 30 years service, 75 per cent. after 40 years, 100 per cent. after 50 years. In order that the state may pay pensions it requires all teachers to pay an annual premium into the pension fund, namely, 1 per cent. of a salary of $400, 1½ per cent. of a salary of $400 to $1000, 2 per cent. of $1000 to $2000. Teachers of each governmental district have Widows' and Orphans' Aid Societies. If a teacher dies in office his widow can claim from 20 to 25 per cent. of his salary from the state pension fund; this, with the proceeds from the aid societies, assures her a comfortable income.

Prof. Schuler of the Pedagogium at Innsbruck has lately completed in the yard of that institution a relief representation of Tyrol laid out to scale, and with real rocks and mountains and valleys the depth of a man through which the students can wander. On the grounds of Chautauqua is a less accurate representation of Palestine.

Out of every 100 Christian or Protestant children in Prussia about 10, and of Jewish children about 47, go beyond the elementary studies required for all. The falling off of Jewish boys in the gymnasium and real schools after the stage of exemption from two of the three years of military service is no less remarkable.

Mannheim has just finished a monster school-house containing 42 school rooms, two drawing halls, two music halls, two manual training halls and a gymnasium, a large session room, besides offices, janitors' dwellings and four neat little prisons under the roof, and a dining hall that accommodates 900 children. The total cost is about $250,000.

From the last annual report of the minister of education, Csaky, of Hungary, it appears that one of the leading duties of the state board of education is to examine, criticise, and approve or reject text books. About half of all examined were rejected as worthless; and in all 675 works have now been passed with approval.

In Prussia last year 266 gymnasia examined for graduation 3,851 pupils; 3,702 passed, 149 failed. Six of those passed were less than 17 years old, 98 were 17, 579 were 18, 972 were 19, 959 were 20, 1,088 were 21 or more. 616 went to protestant theological universities, 326 to catholic, 12 to Hebrew, 703 studied law, 29 cameralia, 873 medicine, 210 philology and philosophy, 109 mathematics and natural sciences, 239 went to military academies, 110 are civil engineers, 33 mining engineers, 270 engaged in forestry, postal and state civil service, 130 in farming, commerce, and industrial pursuits, 37 in other callings.

Last summer the Society of Public School Teachers of Berlin (2251 members) was admitted to the German Teachers' Union (1871 with 34,000 members). Baden, Bavaria, Saxony, Thuringen and Mecklenburg are the only provinces which have not yet joined.

A little more than a year ago nearly fifty German professors and special teachers were imported by Chili, where they are under engagement for a term of six years. The salaries are very liberal, and their home reports are very favorable.

The Oldenburg German teachers contracted with the fire insurance company "Providentia," according to which a certain discount should be allowed them if they all insured in that company. Within ten years the treasury of the teachers' society received installments amounting to 2,603 marks from the company. This sum has been turned over into the Pestalozzi relief fund for widows and orphans of teachers. This fund had in 1889 an income of 529 marks. The teachers' society of Oldenburg has since its foundation spent 70,000 marks for its widows and orphans.

The "International Educational Council" formed by Herr Malkenboor has 1,768 members,—100 Belgians, 54 Danes, 71 Germans, 45 Englishmen, 138 Frenchmen, 609 Italians, 58 Mexicans, 414 Hollanders, 83 Austrian Hungarians, 124 Swedes and others. Its aim—to do away with everything which may engender hatred of or contempt for other nations, or anything which may serve to check friendly relations between the civilized nations.

Of 7,981 criminals in Prussia, 60 had higher education, 1,965 purely elementary, 4,109 defective, and 307 less, and 1,402 no school education. The Saxon report adds that most criminals are those who cannot submit their will to authority, and must satisfy their desires and wishes at any price.

In Darmstadt and other large German cities pot-plants are given to school children who live in tenements. They are usually three in number and of the same size, with printed directions how to care for them. At the end of a year are exhibitions and prizes.

In Russia, Servia, Roumania and Bulgaria over 80 per cent. of the population are illiterate, Spain 63 per cent., Italy 48 per cent., Hungary 43 per cent., Austria 39 per cent., Ireland 21 per cent., France and Belgium 15 per cent., Holland 10 per cent., United States (whites) 8 per cent., Scotland 7 per cent., Switzerland 2.5 per cent., some parts of Germany 1 per cent. In Sweden, Denmark, Bavaria, Wuertemberg and Saxony only rarely a person cannot write.

In Germany teachers' appointments are not systematically regulated by law. In some provinces the community, in others the supervisory authority, in others the patron or land owner appoints them. But in whatever way, the government must confirm or reject the appointment.

As Prussia Germanizes Lorraine and Alsace by removing teachers who have not yet learned German, so Russia has lately enforced the Russian language in Dorpat and Helsingfors, and even closed the German teachers' seminary at Dorpat. The Lutheran seminary there will be changed and moved.

The Diesterweg fund since 1866 has increased to 15,005 marks (namely, gifts amounting to 7,703 marks, annual dues 2,656 marks, interest 4,645 marks). The expenses were 9,149 marks (namely, 3,354 marks for Diesterweg's monument, and 3,683 marks for prizes for literary work which propagated and extended Diesterweg's ideas.)

In the numbers of the Lancet for July 26, and Aug. 30, 1890, are to be found two papers by Walter Pye on the "Growth rates of the Body, and especially of the Limbs, in their Relation to the Processes of Rectification of Deformity." Some of the items in regard to growth are as follows: In general the time of most rapid growth both relatively and absolutely, for both sexes alike, is the first five years. Growth is most rapid in the first year, and falls off by degrees till the eighth. In the whole time of growth the lower extremities lengthen five-fold (and on their growth, say in the first six years, depends the stature,) the trunk three fold and the head and neck double. A comparison of Pye's measurements with others made sixty years ago seems to indicate that children are taller now than then, at least in the better parts of London and the suburbs of large towns.

The property of the Teachers' Union of Baden is 100,000 marks; stock of printing establishment in hands of teachers yields 5 per cent. extra dividend in addition to regular dividend. From this 2,741 marks goes to the Pestalozzi Society for material support, 2,741 marks to the Widows' and Orphans' Fund, 3,400 marks for temporary support of deserving teachers.

The Rhenish Society for Public Hygiene called for prize essays to be inserted in the school readers. 838 essays were received, 182 of merit, 34 received prizes. Of these 34, 22 were written by teachers, 12 by physicians.

Of 100 persons *can read:* in Germany 94, Austria 88, England 91, France 88, Italy 74, Spain 69, Russia 53. Of 100 persons *can read, write,* *and cipher:* Germany 89, Austria 75, England 81, France 77, Italy 63, Spain 49, Russia 39. Of 100 persons are *familiar with another language:* Germany 69, Austria 61, England 34, France 29, Italy 28, Spain 13. Of 100 persons who have familiarity with the classics: Germany has 32, Austria 13, England 21, France 20, Italy 17, Spain 7, Russia 2.

Series of public games in connection with gymnastic exercises have been so successful in Görlitz that the minister has asked the teachers to publish their methods.

The National Teachers' Association of Denmark embraces the best parliamentary members, physicians, clergymen, army officers in the country, and its meetings are of great interest, and bring expression of opinion from all sources.

A motion to withhold goverment aid to normal schools in Scotland that teachers might not be excluded from the benefits of university training in pedagogy was supported by 75 votes.

The professional spirit in Europe is shown by the fact that outside the official meetings for teachers,—the Austria teachers maintain 389 free societies for the promotion of their professional studies.

In Denmark there are now so many licensed female teachers that if vacancies were filled according to date of license the last graduate would receive an appointment about 40 years hence.

In Halle a scale of teachers' salaries has lately been adopted which begins with 1,200 marks and goes up eleven stages of increase till at 30 years of service its reaches 2,700 marks. This is exclusive of residence.

In Austria the bishops are urging that elementary education be given into the hands of the clergy. Minister von Gautsch answers evasively. A two-thirds vote will be necessary to bring about so important a change.

Dantzic teachers can now see the periodic reports concerning themselves and their work, hitherto secret, filed with the government by the royal inspectors. It is a mirror that clarifies their self-consciousness.

The fathers of 23 per cent. of the students of Prussian universities have attended universities themselves, and 56 per cent. of all the students have parents without any academic training.

The Prussian universities warn local city boards not to employ young graduates of normal schools till they have first had experience in country schools.

The richest school in Berlin is the Joachimthal gymnasium. It has numerous farms, and 20,000 acres of arable land. Besides this it collects and uses the rent of 17 villages.

Falkenstein has added two years to the obligatory attendance of girls, who must now attend till the age of 16, the additional time to be spent in technical female occupation.

In Zürich it is proposed that teachers' seminaries be joined to other secondary institutions, and that teachers preparation be terminated in the university.

A petition signed by members of the academy, professors, teachers, department, etc., has been presented to the French Academy praying for more simplicity in spelling French.

Pupils in a number of English and Scotch schools lately struck and marched noisily through the streets, demanding less hours and the abolition of school tasks.

The oldest teachers' society in Austria is the "Society of Principals and Rectors of the People's Schools of Vienna," founded in 1795. The first compulsory attendance law was passed in 1713.

The German Teachers Union has 34,000 members, and was founded in 1871. The only parts of Germany which have not joined are Baden, Bavaria, Saxony, Thuringia, and Mecklenburg.

In Germany the deficiency in number of elementary teachers is on the increase. In Arnsberg there were 34 applicants for 150 vacancies. No relief seems possible till salaries are raised. These now average less than $300.

Dr. Walter Simon, of Königsberg, presented 20 acres (value 30,000 marks) for a "Children's Play Ground," and 20,000 marks for apparatus, plants, etc.

"The Bohemian School Association" possesses funds to the amount of 200,000 florins, and it has established 75 schools, 193 class rooms, 57 localities, 8,069 pupils.

Emperor William II. has subscribed 10,000 marks for a monument in honor of Adolph Diesterweg, the "Horace Mann" of Prussia.

The Pestalozzi monument, unveiled at Yverdun, cost 36,850 francs. Only a hundred francs ($20) of this sum came from America.

Basel has abolished all school fees and gives free text books and other necessary school apparatus in primary, grammar and high schools.

The citizens of Paulan have erected a monument to their teacher, Hacke, with the motto "Remember Your Teacher."

The vacations in Prussian schools amount to seven weeks per year. In this country they amount to 12–13 weeks.

All school officials, including inspectors, principals, etc., will wear uniforms if a motion now pending prevails in Austria.

Not pupils but teachers are marked in Prussia, according to the rank of their pupils in passing examinations.

Last year there were 436 American students in German universities, more than from any other non-German country.

Schools for dullards or slow, backward children are now being rapidly established in all large German towns.

Next July all teachers in the Argentine Republic who cannot show diplomas must submit to an examination.

About 36 per cent. of all students in Prussian universities are supported by stipends, scholarships, etc.

Gratz provides each child in school with a pot-plant, and an exhibition shows how well it is cared for.

Religious instruction has just been abolished in all state schools in Brazil.

A new geographical school museum has been founded in Cassel.

In France for 54 vacancies no less than 6,441 well qualified and licensed women applied.

Jules Steeg, in Revue Pédagogique, Jan. and Mar. 1891, describes a movement which has for its object the saving of abandoned children, and affords a lesson in practical morality and charity for the school-children of France. *L'Union française pour le sauvetage de l'enfance* was founded in Paris in 1888. It now has members in 70 departments. A law of July 1889 removes parental authority from those who are unworthy or incompetent to provide for their children. The society, in less than two years, has rescued 1,300 children, generally securing homes in the country. The school-children of the cities and villages throughout France contribute funds. Many schools and classes possess certificates of membership in the society, procured by the annual payment of 5 francs. The Minister of Instruction encourages this means of moral education. "The children succor the children."

The best educators are those who learn most from children. The study of children will solve many of the problems of philology and psychology.—Children as Teachers, E. A. Kirkpatrick, Lend a Hand, Jan. 1891.

The sounds produced in the throat are the more difficult; labials and dentals are formed with the greatest ease. Infants utter earliest and oftenest the sounds most easily pronounced. First uttered at random, these sounds become associated with objects, and are inherited as the lingual property of the race.—Law of Mispronunciation and Child's Speech. E. Noble. Education, Sept. and Oct., 1888.

EDITORIAL.

This number of the PEDAGOGICAL SEMINARY, which closes Vol. I, presents, after much labor and expense, a large body of information, most of which has not hitherto been accessible in English. It is little known in this country what remarkable advances are now being made in Europe in the highest academic fields of education. This is the brightest part of the entire educational field. No one can read these plain and very meagre accounts of what has been already done without inspiration and enthusiasm. He will realize that, important as have been the improvements in primary and secondary education in Europe, these are small when compared with the advances in the highest academic work; that the latter are the sources of supply, and originate the material of culture, and that the former are the channels for distributing it. He will see that the great weakness of the American system of education is not primarily or chiefly in its public schools, but in its universities; that these must be kept, in their organization and in all their departments, as plastic and servile to the needs of advancing culture and science, as our last number showed school-houses, seats, studies, methods, etc., should be to the needs of the body and mind of the natural, growing child. He will see the methods and direction of reforms needed here and already proven feasable and most beneficent in other lands. He will see the peculiar difficulties which our American method of academic organization and administration places in the way of reforming old institutions, and the greater need of new ones, and the peculiar and unequaled opportunities which this same American system opens to them. He will see that in training the average collegian we have been in danger of forgetting how to educate superior minds, and train them to leadership. He will realize that both from the greatly increased expensiveness, and from the no less increased diversification and specialization which distinguishes university from college work, there arises a new and urgent necessity for co-ordination, the need of which is certain to be felt exactly in proportion to the high character of the work really undertaken. He will realize the far sighted sagacity of our ablest young college presidents in distinguishing college from university to the advantage and honor of both, e. g., p. 487, 106, 107. He will realize the need of relieving university leaders from the strain of the old policy of competition by a new policy of co-operation and co-ordination, which will permit the increased specialization needed at the top of our system and reduce within proper limits the waste of duplication. Finally, he will see the urgent need, especially in the present crisis, of training future leaders in the field of higher education to the same expert knowledge of efforts and achievements in other lands, and the same habit of preceding every important new step by a wide survey in order to profit by experiences of success and failure elsewhere, as are now imperative for every reputable professor before a new research, or for every business man if he would succeed in inventing new processes, or in finding new markets or fields for investment.

Glancing now at items: The draft-charter of the new *Albert University*, p. 349, now bids fair to give to the largest center of population in the world a fit modern temple of science. In France all parties are uniting in a bill which transforms its system of higher education into *universities of the German type*, with many important improvements on that type, p. 327. It now only remains for her to reconstruct her system of intermediate instruction (which, as dependent upon both primary and superior, is usually the last of the three, as it should be, to be affected by movements of reform), and she will have re-constructed her entire system of education; a work which in the language of a French statesmen "has engaged the best talent of the nation for 15 years and increased her yearly educational budget over 700 per cent." Perhaps no less interesting is the new *Reichs Anstalt* in Berlin, p. 335, which is not Prussian, but German, and marks the first attempt to coordinate research in different universities in the field of physics and chemistry. While undertaking investigations too great for single professors or universities, it offers also to suggest and direct work in any or all. It thus takes a distinct step in advance, and while consecrated to research will also strive to make still more supreme the rapidly growing dominion of science over arts and industries. The *Zoölogical Station* at Naples, p. 338, is older, and, unlike the *Anstalt*, and at variance with the present tendency in Germany, is international, and is private. The *Musée Guimet*, p. 334, is perhaps the most interesting and important departure in recent times in the field of higher religious education, and combines the practical, pedagogical and scientific in a unique way. Of the *Ecole Libre*, p. 331, the same is true in the larger faculty of administration, political, economic and social sciences. It, like the *Musée*, is private. To compare the report of its noble achievements with what is done in this country in the same line and in academic grades would be unfair to us. Even the standards of our civil service commission, from which so much was hoped, appear to be declining, p. 360. The *Ecole des Hautes Etudes*, p. 19 and 329, best shows its magnificent work in its annual *Bibliotheque*. The *University of Japan*, p. 369, has been developed in the light of all the best occidental experience and on an almost ideal plan, and is the chief instrument in the marvellous transformation of that country. We have selected these eight from a far longer list of recent institutions, to be resumed later, as types, each in a different field, of the present unprecedented advance in academic development. That each may be studied with the greatest care by our American universities, its lessons laid well to heart, and its experience utilized in the rapid unfoldments that now seem imminent here, must be the heartfelt wish of every intelligent patriot. Besides the many new institutions, reforms of the older are the watchword of the hour. The need, the direction and the strength of this tendency is reflected in such utterances as those of Meyer, p. 343 ; Flach, p. 335, Haupt, p. 347 ; in the great Russian reconstruction of 1884, p. 363 ; in the reform movements in Holland, p. 30, and in Belgium, p. 111 ; in federation in Canada, p. 41 ; in Martello's pitiful story of the present state of most Italian universities, p. 282 ; in Rowland's condemnation of certain tendencies,

p. 280, and in the low estate of mathematics in this country, p. 447, *et seq.*; in such complaints as those of Halle, p. 28; White, p. 92; Burgess, p. 480; Davis and Sheldon, p. 488. Even in medical education, the best taught of the three traditional professions, reforms are projected, p. 44 to 53, p. 353. Still more is this true in law, p. 348, 350, note p. 491, to which space will be given later. There are many noble schemes and ideals, p. 19, 21, 43, 44, 105-7, 481, and fresh interest in the history of higher education in this country, p. 34, 36, 102-4, 354. No one can read these digests, few and inadequate as they may be, without seeing that this deepening interest in higher education has not only borne much fruit already, but that much greater things are to be expected of it in a not very remote future.

The recent improvements in the architectural installation of higher education have been also remarkable. Beginning with the four magnificent buildings costing from two to four million dollars each, p. 380-81, we must note Strassburg, built as if to show the neighboring academy of Nancy and to all France what Germany could do for highest culture, p. 382; Kiel, with every university building new, on what till 1866 was Danish soil, as if in rivalry to the University of Copenhagen; Halle, with an ideal group of new medical buildings to compete with Saxon Leipzic; the vast new structures at Aix la Chapelle, Glasgow, Breslau, as an intellectual fortress against Russia and her German university at Dorpat, Berlin, including the new one million dollar *Anstalt* above; the new group of university buildings at Turin, built to rival the palaces in architectural impressiveness, and the still larger plans at Naples; the marble academy of Sina at Athens, p. 442, a model lycée costing $2,500,000, p. 432, and scores more of university buildings—designed to be models of which we have gathered many plans and descriptions, p. 435-7, note p. 502. We note here the following features: 1. Competition, open to all architects, with prizes for plans. 2. Traditions, more or less matured concerning certain classes of buildings, (read particularly p. 383, *et seq.* 386, 388, 434), which co-ordinate a mass of details and experiences, so that few new structures are now built in Europe without careful study of good and bad points of others. Sometimes, as in the very interesting article on public baths, p. 425, or on gymnasia, p. 426, this tradition has not yet hardened into a canon, or norm. The consensus is never here so exact as with lower school buildings, where it is formulated in laws which prescribe for foundation, material, color of wall, temperature, seats (ideally adjusted to fit each pupil, p. 431-2), heating, surface, space per child, etc., p. 427-32. Interesting and new in this country are the German and French way of presenting the entire description and plan of buildings in tabular form, and estimating total cost, gas, plumbing, and heating per square and cubic meter of the building, p. 425, as well as the new vocation of architect pedagogue for each chief class of building, to harmonize the many claims and increasing mass of details. The note on p. 361 hardly does justice to what has been done in this country, and our correspondent's challedge to our colleges to print their ground plans would not, we believe, reveal so unhygienic conditions as he seems to suspect. A comparison of this literature with the bulletin on school heating and ventilation just published by the Bureau of Education shows that we have very much to learn as well as something to teach. This epoch of educational building has extended to Australia, India, New Zealand, Switzerland, Hungary, Finland, Sweden, in all of which groups of expensive new University buildings, designed to embody all the best and latest improvements, have been recently inaugurated, and indeed to nearly every civilized land. In our own country more and better than ever before is now being undertaken. Just as a thorough study of finance in all its departments is a key to all business and administrative functions, so a thorough study of educational architecture, which is more and more plastic to the state and needs of science in its higher and to the physiology and hygiene of childhood in its lower grades, involves insight into many of the fundamental questions of pedagogy.

All this advance is because, since Germany showed in 1870 what a thorough-going national policy of education could do for a country in two generations (see Educational Reform, PED. SEM., p. 1-12), leading nations in Europe have been seeking a new principle of life in universities, which are fast acquiring a new character and new functions. Perhaps monarchial lands have learned sooner than republics the momentous lesson of recent educational history that the vitality of an educational system is at the top and not at the bottom; that while higher and lower education always act and re-act on each other, the best and strongest educational influences work from above downwards, and that it is the higher that has usually controlled and reformed the lower. The university courses shape those of the college, the college shapes the preparatory school, the high the grammar school, etc. But more important is the fact that lower grade institutions are but a system of canals to distribute and apply the science and culture wrought out at the higher. One function of the university is to train good teachers for the schools next below. Where this function is well discharged, as in Germany, p. 390, there is no such gap between them as that complained of on page 461. The fact that schools are the one thing in which everybody now profoundly believes, and that they have sprung up everywhere and become leading agencies in colonization, industrial supremacy and good government (read p. 119-20), opens one of the broadest and most legitimate fields of university extension, and one not yet occupied in this country.

It is universities which largely determine whether a land is cursed by a factious, superstitious, half-cultured clergy, or blessed by ministers of divine truth who understand and believe the doctrines they teach, who can attract and enlarge the learned, and penetrate the life of the poor, ignorant and depraved, quickening, comforting and informing in a way worthy the Great Teacher himself—and making their profession as it should be, the noblest of human callings. It is universities that largely determine whether the legal profession is formal, narrow, mercenary and unlearned, incompetent to meet the demands of rapid business and industrial development, unable to draft good laws, and confused amidst incompetent and conflicting judicial decisions, as it seemed lately in danger of becoming in Germany, (because even her universities, pre-eminent as they are in most respects, are by general consent of competent Germans relatively weak here, p.

348, 350,) or broadly based in history, in the social, political economic and administrative sciences which underlie the knowledge of law, and culminate in judicial talent and statesmanship. So, too, the practice of medicine was raised to a position of dignity and influence that it never enjoyed before by the new physiology of Johannes Müller and his successors and the work they stimulated. Helmholtz's discovery of the ophthalmoscope made a new department of medical practice, the development of which was so great that even Graefe, its founder, said he could not follow it. Lister's discovery of anti-septic surgery, the discovery of the reflex arc, the specific energy and isolated conductivity of nerves which Helmholtz calls as important as the law of gravity, and which originated modern neurology, the new results of Pasteur and Koch,—it is such university research that has made the medical profession of to-day. Again, chemistry, physics, electricity, geology and other sciences underlie, and condition more and more of the industries of the world. This has led to the creation of great technological schools, and is showing to business men and employers that no course in the pure sciences which underlie technology can be too advanced, prolonged or severe to be practical. Success in the many fields of industrial competition, and the command of the world's markets depends more and more upon the state of the physical sciences which control all the arts of peace and war. Finally, it is the biological sciences (which treat of life, health, reproduction and disease), that begin with the lowest and lead to the top of the evolutionary ladder that are giving shape to our ideas of living nature and society, and are enlarging, clarifying and re-enforcing the highest religious and philosophical ideas.

It is new conditions like these that are giving to universities greatly enlarged functions, new problems, and, indeed, to the very word university a new meaning. It is they that more and more initiate and regulate progress. In Europe they train all the higher officers of state. Everywhere they train the experts who in all departments of life now rule the world. Universities have become the leading question of our age. Their patronage is the chief glory of the modern state, and it is their discoveries that now kindle the brightest lights upon the muses' sacred hill. Their elaborate and detailed statutes and ordinances (read p. 372-5, 260-64 and 24-28), unknown in this country, show in the words of an eminent German jurist, that "the modern university is the highest, best organized and altogether most perfect type of all modern institutions—an ideal platonic commonwealth."

The policy of associating schools of forestry and agriculture, and even technological schools, with universities is now generally admitted. It is still more necessary that schools of law, medecine and theology should not be isolated but that their students should at least have a glimpse of the highest of all culture work, and that they should all be, in some way, connected with the university and be touched with its larger life. But while all these new fields of university extension open new opportunities, they enhance old dangers and bring new ones. All lapses to dead mechanism and routine if not all animated by the life and light of the ardent love and tireless research after truth. The more professional and technical schools are grouped about the philosophical faculty, which is preeminently devoted to the purer forms of science, the better, provided it generates heat enough to kindle them, but all university extension requires corresponding intensity of academic life, or there will soon be no university worth extending (see p. 6-9). The great French reform has been achieved by university contraction, by private and esoteric courses in the place of the former public, popular courses, (p. 20). This disinterested work for knowledge is the heart of the university and through it of the entire educational system of a country from which the policy of competing for students, or of attracting appropriations, gifts or bequests so profoundly yet lamentably dominant everywhere in this country, must not divert.

It is to advance this higher and central work that the new institutions, described on pages 327 to 341, were organized and that the many methods of internal development which place the interest of science before those of the institution have lately been devised. The chief of most of these measures is to separate talent from mediocrity among both professors and students by lines that are both broad and obvious, and while doing no less but rather more for average men to give the best far larger opportunity and incentive that they have ever had before. The over production of academic mediocrity is a good mesure of the under production of excellence. (p. 478 492). Mass teaching must go on, but the higher pedagogy is now working out individual methods fit only for the best few men in every hundred, by which talent, the most precious possession in modern life is brought to fullest maturity.

The first of these new methods is the modern as distinct from the medieval fellowship system, which carefully selects and then no less carefully guides a few chosen men in the later critical and expensive stages of their preparation for professorships and other posts of public and private leadership. Not only must neither the best talent of the best professors nor the precious funds of devoted testators be wasted upon the idle, stupid and unworthy students now too often exposed in vain for four years to the contagion knowledge; but, just as the modern charity, which has become a science as well as a virtue, refuses to give doles to beggars without some agency of assurance that its work will do good and not harm to the recipient, so fellowships should not be given to men fresh from colleges unless they can be guided and followed, and stimulated by daily and familiar intercourse with the professor. A fellow is more and more an apprentice, and a joint-worker. With a few such men teaching, instead of tending to mechanism and routine, becomes almost an holy passion, making us feel with Plato, that in all the world there is no object more worthy of love, reverence, and service than eugenic, eupeptic, gifted young men, in whom is the hope of the world. Fellowships are of course old, p. 260, e. g., but the system has been reconstructed in England, yet more lately enlarged and placed on an higher basis and adopted by the government in France, has been particularly prominent in some of its various forms in nearly all the new higher institutions founded within the last decade or two, as a method of working from the top downward, by which a new institution in fewest years sees its graduates in highest places and attains soonest to large public usefulness. Some of the best scientific work of recent years has been done by young men thus guided.

A second method of separating talent from mediocrity is the seminary system, which has in late years added a small but higher story to continental universities. These, as every one knows, are small groups or teams of advanced men working on methods quite as much as on results, and in the closest and most informal association with the instructors. In continental Europe the seminary is usually immediately under the minister of education and accountable to him and not to the university. It has from the ministry its special statutes and funds. No department not well established, strong, and of cardinal importance is granted the privilege of organizing a seminary; and permission is often withheld. To be appointed its director is a special honor to any professor, and to get into it is an honor for the student, for its members are few and usually limited by its organic law. In not a few universities pro-seminaries to fit students for seminaries have now been organized. In these pedagogical *adyta* great masters inspire, and pass on the torch of learning to their chosen disciples. How to study, methods of research, original sources of information, critical and independent judgment, the style, method, spirit of the master are imparted by induction, and not a few of the most important recent advances in human knowledge have been the direct fruit of the methods of the seminary; but a single commonplace member spoils its tone, and a commonplace professor can only parody it.

The modern laboratory of research (as distinct from a practice laboratory) depends no less upon the rigor of its exclusiveness. The physiological laboratory of Leipzig, e. g., is a large building, yet receives but from 8 to 10 men, and usually has less. Yet in the quarter of a century of its existence it has trained most of the best professors of physiology throughout the world and its work has enriched the entire medical profession with new facts, principles, and knowledge of the highest practical and scientific value. Beloved and admired as its great leader, Ludwig, is by all the experts of the world, he is little known outside, and how many thousands owe life and health to his researches who never heard his name!

The like might be said of other leaders and laboratories.

The most of the greatest leaders habitually work with half a dozen men or less. France sifts out from all its educational systems the few best each year for the state aid and other special privileges and incentives of its great *Ecole pratique*, p. 329, its school of politics, p. 331. Japan by the last report had 23 men in its University Hall, built at great expense to complete the training of the few best for the service of science and the state, p. 370. All these and many more are new and higher stories in Bacon's House of Solomon.

Not only students, but professors, are distinguished, the best from the common average. In France, the few best professors are not only placed on the staff of the *Ecole pratique*, but even their pay is increased. Again, led by Breslau and Göttingen, several of the best German universities are forming select academies of their own élite instructors and rigorously excluding all but the best. Led by Vienna, the docent system in many places is now so modified that the brightest young scholars can compete for fees and pupils almost on even terms with older professors in ways that have proven a powerful stimulus to both. Led by Halle and Kiel, every Prussian university must by a recent order of the Cultus minister henceforth publish a chronicle of its scientific research each year, which sets forth each instructor's productiveness or non-productiveness in the clearest light, p. 376. The best professors are elected to great national and international academies of science; with now in Berlin the function of full professor in all the Prussian universities at once, with power to lecture in one or more on equal terms with any of the local professors, p. 342, 375 6, etc. In Athens, the best professors are now being elected to its magnificent academy, p. 442. Expeditions, prizes and honorary titles, rank in learned societies, advancement from smaller to larger universities by merit; all these—some old, but most new—have greatly increased the incentive to highest work.

Finally, universities themselves are now being compared and ranked. This policy has been either proposed or adopted in nearly all leading countries of Europe. The differentiation ranges from the emphasis or even monopoly of one or two subjects locally favored to the restriction of the field of single institutions to certain limited subjects or groups, and even to the legal extermination of certain universities where the customs of faculty or students were deemed irredeemably bad. In Scotland a general university court has been proposed, but not yet established; in France a committee is now collecting material for a report on the international equivalence of degrees. Several new inter-university and international student associations, like most great medical and legal associations, are fast grading and comparing the efficiency of the same departments in different universities.

Now of all these new departures there are two watchwords and touchstones. The first is research. The interests and needs of research have been more and more dominant in determining the form of even university buildings. An eminent professor lately said—extravagantly, of course—that nothing would now contribute more to the advance of chemistry than cheap laboratories that could be totally rebuilt every ten years to meet the new problems of that magnificent science. Quite apart from the value of new discoveries to industry, not to speak of the new intellectual world that has been opened by whole-souled consecration to the work of investigation, is the educational value of the labor and attitude of research. It is this which cultivates the power of *effort*, which psychologists now agree is probably the highest and most educable part of man. It is the effort to secure this end that is transforming the methods of lower schools also. It is by training the self-activity of effort that the new education of action takes the place of the more passive methods of cram, and thus fits best for the life of the next few decades to see and act in which is the thrice-blessed privilege of the student of to-day. The most popular and impressive German book of the year is a voluminous argument that the present age of science is now to be succeeded by a new age of art, wherein the professor who knows shall give place to the artist who does, or produces. p. 61.

The other watchword of these departures is specialization. When we reflect that modern science (meaning the great body of completely proven and logically well knit knowledge in all fields that is both certain and exact) is the greatest achievement of the race thus far, that it contains the greatest culture power, makes the best woven mental and cerebral tissue, that because universities are its peculiar organ they are the chief nurseries of talent and are charged with the highest interests of man, we cannot wonder that men are content to labor long and obscurely to bring one new stone to an edifice so magnificent. Since Comte and Darwin, and the doctrine of the conservation of energy and molecular physics have made the world one in a sense unknown before, so that every science must now be comparative, so that every great discovery is felt in all parts of the field of knowledge the dangers of specialization have decreased and the necessity for focusing has become imperative. General culture is the best soil for any kind of culture to spring from, and power, though best applied at a small surface is best developed over a large one, but general culture is the symmetrical all-sided development of the individual. Strength lies in individualization. Its type is not the encyclopedist Diderot who would learn all trades, or Plato's Hippias, who would make his own clothes and shoes, cook his own food, etc., but rather Goethe, Schiller, the great philologists and philosophers in Germany before 1810 who never passed an examination. (Read p. 122.) The products of a too prolonged general culture are among the saddest products of our contemporary institutions. A truly liberal education in the modern as distinct from the medioeval sense is now professional specialization on the lines of natural gifts and individualization.

The committee on the new German *Anstalt* (p. 335) report that the establishment of weights and measures sufficiently accurate for modern needs requires profound experimental study in molecular physics, light, electricity, thermo dynamics, and, indeed, every known property of matter. Such is the *omne tulit punctum* of nature's organic unity which gives a new religious consecration to science, teaching that the world is lawful to the core.

Again there are marked tendencies among our universities and other higher institutions to specialize and co-ordinate, as integration is said to go with differentiation. No man or institution leads in all departments of chemistry, or of physics, or electricity, e. g. More and more each aims to lead in one part of the field and recognizes in other parts the same authority elsewhere. So in physics, the advanced student goes perhaps to Bonn for electricity, to Berlin if he wishes to specialize in thermo dynamics, and so on. In several countries such differentiation among universities is expressly encouraged or enjoined by the state. Thus, while the disciplinary stages of teaching are done equally well at many centers, for the purposes of higher training the universities of Germany, Italy, Holland,—if we might not say Continental Europe—are slowly becoming one great university in which the departments of each single university are selected by the best students with the same wholesome stimulus to each as our so-called "elective system" has given to rival departments in the same institution. The expense of advanced work and research per man is so vastly greater than that of instruction, that only co-ordination avoids the waste of duplication and the great danger of respectable and complacent mediocrity in the various domains of culture peculiar to democracies, which in their long historic struggles for existence against ignorance and its attendent evils need the whole strength of education—most of all the highest—for their leaders.

Progress along these lines to an higher plane is now an inevitable next step. The new cause of the University is now an inspiration to many for it is in the current of all good tendencies in higher education and these seem now irresistible. The life of science in this country is to be more free, academic policy more independent, the instincts of discipline stronger. Those who can sustain the ardor of research are to be relieved of excessive teaching and examination and kept to their best work. Five thousand dollar professors are not to be kept doing five hundred dollar work. Equipments of books and apparatus are to be ampler, that no force be lost on inferior tools.

As business absorbs more and more of the talent and energy of the world, its considerations more and more prevading if not subordinating, whether for better or worse, not only the arts, the school, the press, but all departments of church and state, making peace and war, cities or deserts, so science is slowly pervading and profoundly modifying literature, philosophy, education, religion and every domain of culture. Both at their best have dangers and are severe schools of integrity. The directness, simplicity, certainty and absorption in work so characteristic, of both are setting new fashions in manners, and even in morals, and bringing man into closer contact with the world as it is. Both are binding the universe together into new unities and imposing a discipline ever severer for body and mind. When their work, purified of deceit and error, is finished, the period of history we now call modern will be rounded to completeness, culture will have abandoned much useless luggage, the chasm between instruction and education will be less disastrous, and all the highest and most sacred human ideals will not be lost or dimmed but will become nearer and more real.

In the fact that the best type of American business man now so often consecrate his fortune to the advancement of higher education, and is never content with what he esteems the second best we see not only the normal, complete, if you please post graduate ethical maturity of an individual business life but also a type and promess of the yet greater things which wealth now seems likely to do for the highest education in our country. Institutions thus founded, and which give a new completeness to life in age which Cicero did not know, are thus a more typical and vital product of the national life at its best then are foundations made by State or Church, in which to train their servents. Endowments for higher education seem now to be the order of the day. We are certainly fast rising above the respectable and complacent mediocrity lately our curse in nearly every domain of culture. We must show that democracy can produce—as it must, or decline—the very highest type of men as leaders. We must have men whose mind have got into independent action, who are authorities and not echoes. The conclusions drawn from perhaps the most comprehensive government report ever issued and based on the study of over 20,000 foundations were that of all the great popular charities, higher education has proven safest, wisest and best, and that for two chief reasons—first, because the superior integrity and ability of the guardians who consented to administer such funds, the intelligence and grateful appreciation of those aided by them, and the strong public interest and resulting publicity—all three combined to hold them perpetually truest to the purpose and spirit of the founders; and secondly, because in improving higher education, all other good causes are most effectively aided. The church can in no other way be more fundamentally served than by providing a still better training for her ministers and missionaries. Charity for hospitals and almshouses is holy, Christ-like work, but to provide a better training for physicians and economists, teaches the world to see and shun the causes of sickness and poverty. Sympathy must always tenderly help the feeblest and even the defective classes, but to help the strongest in the struggle for existence, is to help not them alone, but all others within their influence.

The remarkable contact of the marvelous new business life and energy of North Germany (which in both suddenness and vigor equals anything in this country), with staid and tranquil academic ways, has had some marked reverberations and given new direction and impetus to other studies where it is not directly felt. The great chemical industries, almost monopolized by Germany, depend on the work of professors, whose class rooms and pockets they have filled. If the proximity of the patent office and factory to the university laboratory has narrowed and occasionally given a wrong direction to science, it has intensified it. What chemistry has done for dyeing, and is now ambitious to do in the way of making artificially certain drugs and even foods; the necessity of the spectroscope for the Bessemer process, sugar refining, wine and dye tests for the custom house and two forms of medical diagnosis, the necessity of long study of pure sciences for eminence in medicine, show us how these direct products of whole souled devotion to unremunerative research have made these the "life-springs of all the arts of peace and war." Physicians, technologists, clergymen, lawyers or pedagogues who slight the basal sciences of their profession and hurry to the practical parts, are like those young men who grow prematurely old and sterile.

The university should be a laboratory of the highest possible human development. As another says, "The more and better books, apparatus, collection and teachers, and the fewer but more promising the students, the better the work." It must stand above and fructify the praciical spirit, or the latter will languish for the want of science to apply. The former must make discoveries or the latter cannot make inventions. All questions, if profoundly studied, now become educational. Life is the education of protoplasm, and the hunger for more and larger life is the immortal instinct of talent struggling towards the full maturity and leadership which is its right.

We must defer to a future number the inferences from the literature here presented on teacher training, p. 390-415; on art education, p. 442; on common schools, p. 450; on fitting schools, p. 454; and on pedagogy proper, p. 461.

RECENT LITERATURE OF HIGHER EDUCATION.

I.—FRANCE.

The New French University.

The long expected and long delayed new law creating true universities in France on the German plan has been at length drafted and is ready for the Senate. The bill is long and detailed in itself and is printed with an introduction by E. Lavisse, who has been perhaps its chief protagonist. After 15 years of all sided study the council reached the unanimous verdict that the university form is the best for organizing the higher education. In 1875 Claude Bernard called the Paris laboratories the tombs of savants. The law faculties in all France had on an average 65 francs per year with which to buy books. The 43 faculties had no relation to each other and very little with their own students. Save at Paris it could be said that in the land of Cuvier there was no chair of paleontology, in the land of Champollion no chair of epigraphy, and in the land of Bournouf no chair of linguistics. Point by point, these and many other evils have been resisted and largely overcome in the last 15 years and the appropriations nearly trebled. The government realizes that superior education is the first and chief necessity, and that all primary and intermediate school work is but a system of canals to distribute what flows from this source to the lowest bases of democracy, that the highest education alone can form and discipline men capable of conceiving large and general ideas, on the power and novelty of which now depends the influence of nations. This became the fundamental policy of the government, which with many changes of personelle, has been steadily and unremittingly pursued and with growing and now controlling power over public opinion. The question was fairly and fully put before the faculties by the circular of Nov. 17, 1883, and they were asked carefully to consider their common interests, for the change must be spontaneous. Professors slowly drew together, then students, then both, till now the hour of consecration seems come, and the law which consolidates the past will open a new future.

Theoretically, the idea university has acquired a new meaning. An isolated faculty is a special school which sees only a fragment of science. The university, which originally meant only a corporation, now means a universal school open to all sciences, unites them as they are united in mind and nature, and brings out their relationship. The name is mediæval, but the thing is modern. Prophesied dimly by the encyclopædists and positive philosophy, the university is the most solid and indestructible achievement of this century. It does not rest as in the time of Descartes on an analysis of ideas, but on facts. There is now no order of knowledge not associated with others, no discovery which does not affect the whole of knowledge. The modern university is the adaptation of higher education to the state of science. Its spirit is the great educator of modern times, the chief obstacle against the pretensions of the past, the initiator and regulator of all progress. The universities of the old regime in France failed because they did not rightly embody the spirit of the time from which the new universities spring.

The historical roots of the coming new French Universities go back only to the Revolution. They represent sciences according to their natural affinities. When the Revolution substituted for the old universities its encyclopædist Institutes and Lycées they deposed a word adopted by all western nations and of singular power and attraction. There have been no such high international festivals as the recent university centennials. The old universities drew their power from popes and kings as privileged corporations, the new rest on the State and public law, and are public, not free. If we operated on a *tabula rasa*, with no obligation to the past, the university would be based on the classification of faculties. As the university is an historical development this can be nowhere entirely done. There must be at least four faculties or the university is a fragment. The service of science is moral, therefore it must be free and independent. Each university is to be governed by an university council composed of the rector, deans and two elected representatives of each faculty. They are to control all internal affairs and the independent property of the academies who shall adopt the new law and become universities. The income of this now amounts to 250,000 francs per year, to which the government adds 11 millions more, and therefore reserves the chief administration pertaining to the budget to itself. The council has chief control also over all gifts from the city or province. Hitherto all these funds have been held indistinguishably, and administered by the State like its own rents. To be free and independent the university must have generous aid from the State. In France academic degrees are also degrees of State. Thus while the university may give diplomas of proficiency and certificates, the State will control conditions for and give degrees (as *e. g.* in other lands the degree of doctor of medicine must be supplemented by a State license, based upon examination, before practice is possible). There is to be a university council for higher, an academic council for intermediate, and a departmental council for elementary education.

The two first may meet together at the call of the rector to consider their common interests, which are many. For as the universities will fit teachers for secondary schools, the latter will send pupils up to the university. The rector is all that the German curator is and more. He not only sends Senate reports, building plans, budget projects, programs, vacancies, and every infraction of university statutes to the government, but is the head of all grades of education in his department. The German rector presides on public occasions, etc., and is annually elected, but has only shadowy and traditional right to his title *magnificus*. An university proper can exist only on the basis of a large coöperative spirit. Each of the new universities must and will have not only its own local spirit, but a local character. Subjects will be prominent in one that will not appear in others, and this, with the new and growing controversy will introduce the powerful and, in France, hitherto almost unknown spirit of emulation. The new universities are to bear the names of the cities where they are situated. A report is in preparation on the international equivalence of studies and degrees, and on the ways of facilitating study of foreigners in France, and of Frenchmen in other countries. It is planned to give a few public lectures each year in large halls with abundant illustrative apparatus. The coöperative work desired between faculties and well illustrated at several places in the collaboration of geography by faculties of sciences and of letters, will be next extended to joint work by the faculties of law and letters. A marked feature of this, as of all recent French organization in the field of education, is the number of leading citizens enlisted in the work by the many large committees, etc. Equality of degrees, studies, rights of professors, etc., in each university, is assured. Institutions which do not elect to come under the proposed new law can retain all their present rights and remain academies. Paris and Lyons have already informally approved the new bill.

L'Ecole Pratique Des Hautes Etudes.

In 1868, M. Duruy, Minister of Education, addressed a report to the Emperor suggesting this institution, which is now the culmination of the educational system of France. The absence, he says, of laboratories of research, which are arsenals of science, is a serious menace to the legitimate ambitions of the country. Lacking the best apparatus, leisure and incentive for those original investigations, so characteristic of Germany, the grand institution established by Francis I, Richelieu and Louis XIV, the government patronage of which constituted the ancient glory of France, we are now disarmed in the presence of the enemy. Scholastic customs, he says, have become bad ; the highest institutions promise more than they give. Professors must elaborate, with a superficial seductiveness which is dangerous to substance and wasteful of time, their lectures, which are for transient hearers rather than for pupils or students in any real sense. Ten of the latter are worth more than hundreds of the former. Now gifted young men with the secret flame of genius are not detected and so lack direction, lose time and are discouraged and so lost to science and to France. They should have every facility to develop to the highest possible and be furnished every incentive. They should perpetuate the spirit and method of great teachers, augment science and become the future professors of the country. This, it is finally said, can be accomplished without new buildings or great expenditures of any sort by relieving the best professors of Paris from excessive public lectures, giving them young assisstants, and encouraging them by some additional pay to take a few of the best and most advanced students as apprentices in their own researches and personally to direct their work in conferences and laboratories.

This report contained two decrees, one creating two classes of laboratories, those for general education and those for research, and the other creating the school itself. Both were signed by the Emperor July 31, 1868. The school was organized in four sections—Mathematics—Physics and Chemistry—Natural History and Physiology—and History and Philology. Each of these now has its own rules of internal structure and function. Students of all lands are received for a probationary term of two or three months, and then if approved they must contract to remain the full term of three years. Full admission is by act of the Minister, and is meant to be consecration to the work of erudition. The best work of members of the school is published in the *Bibliothèque* of the school. They may be sent to foreign universities, whence they must send three reports per year. They may be sent on scientific missions to distant parts of the world. The best of them are paid stipends, prizes, and otherwise favored. Each of the four sections is under the control of a committee of patrons of five appointed by the Minister for three years, and these are under a special superior council. The *Ecole Pratique* is thus the heart of the university and the especial care of the Minister. It draws a line somewhat analogous to that between pass and honor men in English universities, selecting out those who are in earnest with their studies, in which they must be both able and advanced, and stimulating them forward by all practicable incitements to research and discovery.

A fifth section in religious sciences was established in 1886 and is now in nearly full operation. It has a professor for each of the following eleven subjects: History of Dogma, Origin of Christianity, Religions of India, of the extreme East, Semitic Religions, Religions of Arabia, Christian Literature, History of Canon Law, History of the Christian Church, Religions of Greece and Rome, Religious Philosophy. These with the vast resources of the *Musée Guimet* and its libraries make a course in comparative religions unequalled in the world. The Annual Report of all the departments of the new school is a volume of some 250 pages devoted entirely to recording in the briefest way the work, discoveries and publication of each department and member of the schools. I select at random the chapter of the last annual report devoted to Natural History and Physiology, with seaside stations at Roscoff (Finistere), at Banyuls on the Mediterranean, at Villefranche, at Wimereux, Marseilles, at Celle or at Havre. Besides these seven, are just twenty more departments of natural science, of which three are for geology and five botanical, and the rest for various phases of animal life. Each has its head professor, assistants and a very small group of students, but the list of papers large and small for the year is several hundred, published in many forms and places. The town or city has in several cases liberally aided in the building or equipment of these seaside laboratories. Systems of exchanges, first between each other and then with foreign stations, have been inaugurated. In some, as e. g. at Celle, the professor gives Saturday courses to classes of school-children. Another Saturday hour is devoted to their teachers. Those in the south and sometimes in the west are open and active all the year. In each of the other departments the activity is correspondingly great. The tendency to little papers, or to publication by morsels, is marked, and there is much more to be said against it than for it; but the showing is on the whole exceedingly impressive, and France may well be proud of her noblest *école*.

Ecole Libre des Sciences Politiques.

No amount of legal knowledge will fit men to solve such problems as free-trade versus protection, pauperism, insanity, crime, labor, education, finance. Social and political sciences are the bases upon which all this growing class of functions rest. Broad views of history, taught as problems rather than as dry chronicle, and the widest and deepest philosophical training are needed. Jurisprudence is more and more studied in an historical and comparative way, which makes jurists as well as attorneys. Business, economics, history of institutions and charities, taxation, administration, international and perhaps Roman law diplomacy, etc., are studied—all as giving a broader scientific base for more special legal studies. The mistakes of law-makers, the lines of policy adopted in this country that have brought misery upon Europe, the fearful wars that might have been avoided in the past had the principle of taxation, industrial policy, the adjustment of executive and legislative power been known, the awful price paid for progress because men lacked the education needful to show them what were their real self-interests,—all this shows the crying need of more and better study of social, economic and political sciences, which are as distinct from courses of legal education as they are from those of theology, medicine or technology.

Long ago wise leaders in Germany established at Tübingen a distinct faculty devoted to this training for the State, the graduates of which hold leading places. It is largely to such University courses that the remarkable efficiency of German administration, which is the admiration of the world, is due. Often these studies are not grouped but scattered through the faculties of law and philosophy. Here are taught the higher geography, statistics, parliamentarism, church and penal and mining law, money, labor, poverty, credit and banking, institutions, socialism, taxation, and many special periods and topics of history, charters, philosophy and journalism. This is done by leading men actively engaged in these fields, so far as possible, on the principle that all higher instruction that holds aloof from the currents of active or public life is always in danger of doctrinairism, pedantry, and perhaps cynicism.

It is in France, however, and in the *Ecole Libre*, where most is done. So deeply have her expensive political, financial and other errors injured France and such became her realization of the need of trained statesmen, and so great has been the suspicion of the government of these schools, that it was left to a private joint stock company (500 shares at 500 francs each) to create under 12 directors and open (Jan. 10, 1872) this best school in the world. The public, and it was feared at first the government, was hostile, the students few, apathetic and took no notes. The first apparent object of the school was to give the highest finish to a liberal education of which it was called the natural crown. But it was found that young Frenchmen were disposed to devote less and less time to study between the close of college and the beginning of business and professional life. Therefore seminaries, which study methods instead of presenting finished conclusions in lectures only, were introduced, and everything was shaped to the needs of the public service. This practical tendency is shown by the fact that the great majority of the graduates enter the higher civil service, and that for a number of classes of places, the great majority of successful candidates are from this school. M. Boutmy, the director, has now a new building (27 Rue St. Guillaume), and in the last announcement there are 29 professors. Not only is here taught that knowledge which no cultivated citizen should be without, but also five classes of the public services of France are fitted for, while finance, public law and diplomacy are especially organized. The best memoirs are printed in the *Annales* of the school. There is a competitive prize of 5000 francs, for travel and study, awarded every five years, besides other minor prizes. The library already contains over 10,000 volumes and over 100 special journals are accessible in the reading rooms. The lectures are very formal, finished and polished. The professor is ushered in by the *concierge*. The conferences are very informal and conversational. The professors are, as a rule, men of prominence in politics or practical administrators. Students enter for one or more full courses and may be examined for diplomas. Auditors take partial courses. The full course is two years, but may be extended to three. The year is from the middle of November to the middle of June. The courses are harmonized with those for the licentiate and doctorate of law. Some think that its courses are now growing too practical and special. As early as 1875 a body of active alumni was organized in sections to meet and co-operate with the students. This school is now a well established force of amelioration acting upon the French public service, bringing the best that is known directly to bear. Every new cabinet shows a strong if not a controlling representation from this powerful educational organization. Men who speak a part of the year as senators and deputies, and the rest from academic chairs, speak with authority. It is an axiom to which France like most European States is now irrevocably committed that the service of the State requires long and careful training. The press with its enormous influence needs careful training. So does the pulpit for dealing with charities and other social questions. Law-makers too need more than "hard common sense." They need to be able to draw upon the experience of the world. Every old form of error and waste, all the abuses in history are liable to recur. The special training of leaders excites imitation, which is so strong a factor in the betterment of social, political and individual life. It is not to the credit of science if the verdict of the mass of voters on great public questions is habitually better than that of the best trained leaders, as has been said to be often the case. There are subjects which would bring out the best powers of young men who often acquire idle habits in college. Some great men have here rendered the world the greatest services of modern times. Nowhere are young men so impatient of mere "discipline," or of culture for its own sake.

The government, instead of being jealous of this free school, which the least breath of suspicion of partisanship would injure, now indirectly favors it. Exact and detailed accounts of the conditions, and time and place and subjects of each state examination, which is a condition for every higher office, are printed in each annual register. Thus science and official careers are brought into closest and most wholesome relation.

The Musée Guimet.

In April, 1876, M. Guimet, a young and wealthy scholar of Lyons, was charged by the Minister of Education of France with a scientific expedition to Japan, China and India, to study the religions of the extreme Orient. In Japan, the reforms offered him a rare opportunity to learn esoteric doctrines. He brought home 300 religious pictures and 600 statues, and over 1,000 volumes illustrating various sects. In China, despite great difficulties, the collections were extensive, while in India he was aided by many English savants. On his return M. Guimet reported to the minister his intention of establishing at Lyons a school of religions, with indigenous professors for the different creeds, viz., five sects of Japanese Budhists, two sects of Indian Budhists, one Confucian and several shintoists. This school was to serve the interests of philosophy, philology and of commerce, and would have correspondents in these different countries. A Museum and a Library were also begun. Utensils illustrating rites and ceremonies, manuscripts, vestments, idols, rituals, plans of temples, shrines, ceramics, pictures of all sorts, were gathered. A fine building was erected and in 1879 the *Annales du Musée Guimet* and also the *Revue de l' Histoire des Religions*, were begun. The former is devoted to special questions, original texts, illustrations, and contains perhaps 600 pages per year. The *Revue* is supplemental and more popular and philosophical. After publishing the first part of the catalogue of his Museum in 1883, a volume of great learning and interest, M. Guimet, realizing that Lyons as an industrial town offered far less advantages for his work than Paris, addressed a letter to the Minister of Education offering to give his entire collection to the government, provided he could remain director for life and the State would erect a building and pay the museum for 40 years the sum of 45,000 francs per year. The offer was accepted and in 1885 one million francs was devoted to land and nearly 500,000 more for a building now finished near the Trocadéro on the *Place d' Iéna*. The catalogue describes it all as a collection of ideas. Each sect, dogma, belief, is represented correctly by objects of the cult Special ceremonials, like the Budhistic *Hau-on-Kau*, e. g., are represented by native priests under the auspices of the Museum, for the instruction of pupils and the edification of audiences admitted upon invitation, and given with explanatory librettos. At first they feared to touch Christian or Hebrew subjects, but soon began timidly with the early heresies, and will proceed as fast as leaders of the church realize that faith can only gain by contact with science. The twelve professors of the new fifth section of the *Ecole Pratique* devoted to the study of religions and established in 1886, find great re-inforcement in the Museum and Libraries of the *Musée Guimet*, and a ready medium of publication in its Annals, with its costly supply of Chinese, Arabic, Hebrew, Greek, Sanscrit and Japanese type and scholars to set them.

II.—GERMANY.

Die Physikalisch-Technische Reichsanstalt.

This magnificent new institution, near the four-million-dollar building of the technological school in Charlottenburg, a suburb of Berlin, is now fast approaching completion, and during the summer some of its departments have been shown to itinerant scientific experts. It is to have no students in the common sense of that term; but fifty or sixty trained men, including mechanics, are to give their time to special scientific problems. It originated in a joint proposition made to the Reichstag by the several States of the North German Confederation. Everyone approved the plans for the section devoted to the technique of precision and to measures and weights. All agreed that the *Anstalt* would help needed scientific intercourse among the States, and increase uniformity and reliability in constructive execution. But to some the work of the normal *Aichung* committee, now connected with the Berlin observatory, seemed neglected. The uniformitization of electrical units, e. g., and of construction elements generally, was a fit field for federal action, it was said, but the work of scientific investigation should be left to individual States. Research many said was best distributed over many points, and this had been the policy of Germany in the past. The work of investigation of these various universities, it was said, would be injured by a great central institution, richly supported by the national government. To normalize methods of obtaining units of measurement, as well as the best way of embodying them, is a wide field in itself. To organize the common interests of the different German States to unite in the fundamental scientific researches needful for weights and measures alone would require not only a division of the present *Aichung* work into two sections, a scientific and a technical, but would involve increasing many fold the present contribution of Germany (12,000 m.) to the International Metric Bureau. It was hoped that the scientific side of these investigations would be made by different institutions. But while greater accuracy and complexity require more time and expense (amply justified by their far-reaching economic utility), critical severity and the intensity of research needed have rather declined on the side of technical art and methods. While administration must not in the least interfere with individual liberty it may aid conscious co-operation among both universities and professors. Great investigations of the larger style, with many and wide practical bearings, are now rarely attempted. Neither have prizes stimulated them. The individual institutions would be greatly aided by a central one, undertaking great secular problems, for this would give the first incentive to many others, and would tend to more co-ordination in research greatly needed. Where special facilities for certain problems existed appropriations could be set apart for them to be done there, and a seat of central knowledge could fill gaps and complete and perfect the advances of science. While thus the doctor's thermometer and the tradesman's measures, &c., are tested in the practical section of the *Anstalt*, the scientific section finds the vast field of molecules, machines, theories of light, attraction, electricity, optics, electricity, motion, celestial as well as terrestrial, open before it. While one section is considering the transmission of electrical power, heating and lighting, and even agricultural technology and the critical working over of all human industry, the economics and prosperity of society, the other section is working on the basal problem of thermo-dynamics, the earth's crust and forces generally, and effecting a solidity of physical branches of knowledge and opening new quarries for investigation. All this work is better represented in a national than an international bureau, while even from the side of the very urgent need of greater exactness and uniformity, which must also be authoritative, the scientific section is imperative and must be dominant.

Work in both sections began in rented rooms in October, 1887. The new building, already in part occupied, has been delayed because in some departments, chiefly the electrical, development has been so rapid of late that modifications have had to be continually made that it be fully abreast of the state of science. The government holds that a laboratory building itself is the most valuable of all scientific instruments, and its proper construction may itself give a great vantage to all workers in it. Its solidity does not favor the statement ascribed to Victor Meyer that in some departments progress was so rapid that laboratories should be so cheaply erected that they could be totally rebuilt every ten years. A brief report of the scientific work accomplished by both sections up to 1891 has just been published (Zeitschrift fur Instrumentenkunde, April, 1891), with a list of papers. Thus far most of the work of the scientific section has been thermometric, electrical and optical. This section has thus far been the smaller, but much of the work of the practical section would commonly be called purely scientific. The new establishment at Ilmenau for testing medical thermometers, is in the center of the great Thuringian thermometer industry, which the first year (ending Oct., 1890), tested 20,000 thermometers, has relieved the *Anstalt* of much of this work, but not of that of testing for chemical and scientific purposes, where the greatest possible exactness is imperative. Manometers, tuning-forks, optical glasses, photometric methods and light units, petroleum tests, are devised or normalized, and various chemical tests have been made. Some have even claimed that this *Anstalt* marked a period of greater scientific rigor of method generally. a rigor that will require some work now currently accepted in more than one field to be all gone over again, as well as marking a far wider and more immediate influence of science upon industry that would give the latter a scientific character it has never enjoyed before.

The development of exact science, it is often said, is the way to overcome the evils of a comprehensive patent system. Research must have all-sided sympathy with practical matters, and not be too limited by pedagogic functions, and therefore cannot be left in the hands of professors alone. There must be a number of trained workers co-operating. Siemens urged the national economic importance of such an organization in showing that the dynamo, e. g., the principle of which was demonstrated in 1867, might thus have been made to yield its great technical usefulness at once instead of after nearly a quarter of a century. International competition in technical matters makes such an organization imperative. By it thermometry has already been made about ten times as exact as before, and it increased the foreign market for German thermometers about threefold. Increased accuracy in chronometers has also expanded the market for German watches and clocks. Such an institution was first advocated 20 years ago by Prof. Schelbach, and approved by Moltke, and the German legislature was petitioned in 1876. The development of new industries often follows the discoveries of pure science. This prompted Siemens to give 500,000 marks towards the scientific part of the proposed institution. The rapid growth of our knowledge of electricity, and the need of measuring and selling it, not only this has been solved, but a photometer seven times as exact as before has been devised. As science grows complex, the direct co-operation of several professors stimulating and supplementing each other in working over the same problem is necessary. The statutes (or Geschäftsordnung) place the *Anstalt* under the Minister of the Interior, and forbid the taking of patents for any of the discoveries or inventions of the *Anstalt*. It is governed by a board of curators, who are scientific men, whose president is named by the Emperor, and of which the president of the *Anstalt*, Helmholtz, is also a member. The members of the curatorium serve for five years, without pay, and meet yearly in March to hear the report and plans of the president. The latter directs all scientific work, and determines just what shall be undertaken, and by whom, where and when, and with whom as chief worker and whom as helper, and where and when all results shall be printed. All the latter must be published with the utmost promptness. Besides members, assistants, and voluntary helpers may be received, and also scientific guests, who may either learn processes or undertake researches.

The Zoölogical Station at Naples.

This remarkable institution is a monument to the zeal of one man, Dr. Anton Dohrn, its founder. Its history as told by him and his friend, Dr. H. Gierke, is not without elements of romance and even pathos. It is a new and model institution, special features of which have been copied far and wide, and taking location and plan into account, is yet the best of its kind in the world. Dr. Dohrn was a docent in Halle, and was fired with interest in his science, and with the desire to make an *international* institution, was able to give $60,000 to it himself, to plead his cause with such ardor that he induced the German government to give him $20,000, obtained $5,000 from England, and many smaller sums from societies, governments, institutions and individuals in many lands. He even persuaded the government of Naples to let him erect his tasteful building in the conspicuous center of its chief promenade ground, and make an annual grant. The building

(1872), was planned for 12 investigators in all, but so popular has it been that over 30 have been there at once, and in the nearly 20 years of its existence it has some 250 men in all. Only investigators already masters of methods can work there, and there is no teaching. The Bay of Naples is extraordinarily rich in varied forms of life and a little flotilla of two small steam-boats, besides row-boats, is at the service of the students there for collecting material. The small open steamboat is named from a brilliant young English investigator, once a student there, Frank Balfour, whose untimely death all naturalists remember. The larger one (20 horse power), is named from the German physiologist, the Johannes Müller, and has lately been entirely re-constructed and equipped for deep water dredging, while the "Balfour" gathers surface forms of life. These are under the command of a very skilful and experienced man, who knows the entire bay, and where to find every form of life. Thus each investigator usually finds what he wants on his table next day fresh from the sea. Any institution, or State, or person, can become proprietors of a table, somewhat as beds in hospitals are provided, and by paying $400 yearly can send anyone they may appoint to occupy a table, with every equipment, and with all other facilities, save a microscope, which each must furnish for himself. The Prussian Cultus ministry at once took four tables; the Berlin academy of sciences and many States and institutions, including several American colleges, have held "tables." The library is very complete, and any member can take any book, the convenient system requiring him only to put a large card with his name on it on the shelf in the place of each book taken. The investigators help each other by mutual consent, and suggestion, but there is no stated instruction. The coffee room overlooking the beautiful bay has seen much reciprocity of advice and information, the growth of many friendships between investigators, whose fields of work were to be very remote. This cosmopolitan character of the institution is unique, and may prove the faint dawn of an internationalism in the service of science, like that which unites the students of the *Propaganda* in Rome, where servants of the Church from every quarter of the globe, distinguished only by the color of their gowns, meet for the last stages of her training.

The station publishes three serials. The most elaborate is the *Monographs*, devoted to the fauna and flora of the gulf of Naples. These are so copiously and elegantly illustrated that they have been often called injurious from their luxury. But the art of the coloring of these costly plates is so true to life that this cause alone has brought them many subscribers and this series is at length nearly a source of income. There are also yearly *Reports*, and a *Journal* (*Mittheilungen*, *etc*). The two latter about half pay their expenses. The *Station* has two other sources of income. The first is its Aquarium, which is in the basement of the building, and is one of the best arranged and most interesting of its kind in the world. This was presided over for the first 10 years by the remarkable Sophie v. Boutkewitsch, who died in 1882, and takes in about 20,000 francs per year, which is about one-sixth the total annual expenses. The other source of income is from the sale of well-preserved forms of sea life. Salvatore Lobianco, a very able, but unschooled young Neapolitan, has devised ways of preserving even the softer and more tenuous forms of sea life, which are guarded by the Station as a trade secret. These are packed and shipped at very moderate cost (the catalogue now contains nearly 1,000 different species), and at a profit of 6,000 to 8,000 lyra per year. Several young officers of the Italian and German navy have been sent here for a few months to learn the technique of putting up specimens, that later they may preserve and send to the Station conserved forms from remote quarters of the globe.

The original building was 33x24 meters, and 16 meters high. It was built of white stone, with open loggia on all sides, and cost 350,000 francs. In 1887, another building, of the same width and height, and of harmonious style, costing 150,000 francs, was added to the west end for the physiology of the lower forms of life. It has long been felt that current physiology was based too much upon the frog, dog and cat. It had been learned that young sharks would endure an amount of mutilation without much affecting their functions far greater than any of these, and it was also seen that, to hold its present high place in science, physiology must become comparative, like anatomy. The functions of the same organ in different animals, and also the rate of growth and the modes of life, time of propagation and its effects on the parent organization, must be studied. Zoölogical work has been too exclusively histology and organology. Physiology, if it is not to run dry, should turn to the great problems opened up to it by Darwin, and the theory of descent. Even for its effects on medicine, it should not have confined itself so exclusively to vertebrate life. It is sure to become slowly zoölogical. Morphology has most of all to regret that more is not known of the action of the senses in aquatic animals—the rate of their growth (some of which it is proposed to study by sinking flat stones certain forms to attach to, and pulling them up to examine every month), what is the connection between this variation of organ and the concurrent variation of structure, etc. To bring the standpoint of physiology into zoölogy phylogenetic problems are imperative. Dr. Isaacs, the practical head of the Station, teaches a class of new methods in zoölogy and another of classification. Finally, perhaps, every vital movement and institution has its ideals. Perhaps the most cherished one here is a large steamer, with complete equipment for a dozen or more well trained men on board, and perhaps with little transportable houses (as in Holland), to be set up on shores where a stay is made.

Die Naturwissenschaftlichen und Medicinischen Staatsanstalten Berlins. BERLIN, 1886, pp. 570.

This large and valuable work was prepared at the instance of the Minister of Education for the 59th meeting of the German naturalists and doctors, by Dr. A. Guttstadt. Some three score institutions are described, and the work is copiously illustrated. We can only sample the contents of the book. The story of the foundation of the Berlin University is told at much length. It was founded, as is well known, just after the peace of Tilsit by which the subjects of the King were reduced to less than five millions, and after the University at Halle had been abolished by Napoleon, and in the effort to make up for outer by inner power. For several decades before, the learning of the professors seemed to many superficial, formal and antiquated, and their methods bad. The king had formally complained that they did not furnish him with good judges. The excesses of the students (always inversely as effective work by professors) had become a source of great annoyance, and the king had made a series of efforts at reformation. Some had even suggested their abolition to make place for professional schools. The king held that reason and philosophy must ever go with religion so that it need not have recourse to authority. This was a simple and forcible idea and had therefore great and immediate power. Moreover, it had behind it the momentum of the Reformation. Some suggested reducing the number of universities to two or more. The stiff pedantry, and spirit of monopoly and cast, so prevalent, aided this movement. Again, for many years an increasing number of men and institutions had been gathering in Berlin, and, as in Washington, the material of a large university was largely already present, and only an organization was lacking although there were many gaps to fill. Men like Schlegel and Fichte and Schleiermacher and others had been drawn to Berlin by the large number of hearers and disciples they found there. H. Humboldt, the academy, and the chief parts of a philosophical and medical faculty were already there. Public lecture courses were remarkably numerous and prolonged. About two score of these are enumerated. The government had sought to attract poets, artists and philosophers. The wide hatred of Prussia among the other German states, the opposition of other universities, the disagreement concerning both the plans and name of the new institutions retarded action. When the French left Berlin, and H. v. Humboldt was minister of education, the university very gradually took shape. A few, first, then more lectures, co-ordinated programs, a building fund, inviting men, and at last it was opened almost without formalities or festivities. A new light, said the poet, is about to dawn, a new fount to spring, a new war is proclaimed, a holy hill of the muses full of glory shall make the soul more free.

In 1813, professors and students left the young university for the battle field after having pledged mutual assistance to each other's families (the origin of the widow fund of German universities), then returned victors and resumed work at the university. It became associated with the deepest patriotic motive, and the "faith of science and learning and that of the fatherland became forever identified." The very many points of interest could be noted did space permit. The university had no library of its own till 1829. Now it has 200,000 volumes and its reading-room is visited by 200 to 300 students daily and 300 to 400 students take books home. The mathematical seminary (1860) is regulated by a special statute, which limits its number to 12. It spends 1,200 marks yearly in books and prizes, and meets two hours weekly. The observatory (1835) has its instruments in an upper story (unlike most others), is in the city, and has a special *Recheninstitut* (1874). The meterological institute has corresponding stations of three orders: 130 which observe three times per day, 50 once daily, and 80 rain stations. When plans now in process of execution are complete there will be a new building with 2,000 corresponding stations. Its *etat* is 73,000 m. Chemistry, physics, physiology, botany, mineralogy, zoölogy, anatomy, pathology, hygiene, pharmacology, the united clinics, geology, etc., are all admirably installed in buildings of their own and well directed.

The Royal Academy of Sciences of Berlin was founded by Leibnitz in 1701, and reorganized in 1744. Its end is the advancement and enlargement of science. It is legally under the ministry of education, is a privileged corporation, and has its own building, seal, property and income. It is divided into two classes, the physico-mathematical and the philosophico-historical. The members are ordinary, foreign, honorary and corresponding. The first must be in or near Berlin, and are 27 in number for each of the two classes

They are elected by ballot, must attend meetings and take part at stated intervals, have free entry to and use of all libraries, collections and institutes, and may lecture in any Prussian university. Each of the 54 ordinary members has a salary of 900 marks. After 25 years membership, or at the age of 70, a member may be relieved of duties. For two or three, residences and special salaries are provided for special purposes and for a limited time. Pensions are not obligatory, but widows received a full salary for a year. The 100 corresponding members are also divided and assigned to classes. Four secretaries, two for each section, appointed for life, and paid 1,800 marks salary, conduct the chief business of the academy. The regular meetings of the academy are every Thursday, the class and general meetings alternating. A lecture by an ordinary member is given at every meeting, after which any member can bring up any scientific subject. Three of these sittings are anniversary services and are public. On Leibnitz-day new members for the year make brief entrance-addresses, which are responded to by one of the secretaries, and obituary addresses follow, and prizes are awarded. The academy undertakes such investigations as require wide coöperation, or long time, and unusual expense, and appoints special committees and administers such funds for purely and strictly scientific purposes as are entrusted to it. It may subsidize expeditions, etc., by non-members, and it publishes *records* of meetings and *memoirs*. The latter may be by non-members by special vote. It also suggests new lines of investigation. The academy spends about 50,000 dollars per year, partly interest of its own capital and partly annual grants by the State. The largest (Alex. von Humboldt) single fund has a separate administration and is devoted to natural history researches and travels, and is open to scholars of all nations. The academy has a library and museum, awards prizes and receives bequests.

Zur Reform der Deutschen Hochschule von J. B. MEYER.

When after the defeat by Napoleon the Prussian King uttered the memorable words, "The state must make good by mental powers what it has lost in physical," and the new university of Berlin was proposed, the quiet academic air was startled by a maze of reform plans. F. A. Wolf would abolish the faculties. In their place Schmaltz and Hufeland would have six or eight scientific classes or sections. Each should have a director, and these with the secretary of the academy should constitute a board of control, that should stand under a curator named by the King, and that should give moral marks. There must be no dictation or *reading* of lectures.

Each professor should determine his own fees. Free public lectures, and academic jurisdiction and fees for degrees, should be abolished. Academy and university should be so united that the academicians should lead the university courses. Schütz would increase disputations and examinations, divide the students into ephorates, make them live in a certain ward and wear an uniform. Erhardt, a Kantean physician, would put in the place of the existing faculties one of philosophy and free arts, one of the arts of prosperity, or all that pertained to administration, and one of medicine. Theology was expelled, because it was exhausted, and was either philology, philosophy or oratory. The number of universities must be reduced. Fichte was yet more radical. Professors should be forbidden to lecture on what was accessible in print, and the universities should become closed schools of the art of the scientific use of the understanding, where each pupil was a disciple working under the closest and constant supervision of a professor. These select students should live in the closest and most intimate relations with the professors, as a stimulus to both, and be supported by the State, and the very best, pensioned for life. Only Prussians should be admitted here, members of other German States only by special permission of the King, and non-Germans not at all. About this nucleus a wider circle of "irregulars" and hearers, who should live about as do now the mass of German students who are on the way to professions and other practical callings, but they must content themselves with the instruction of the extraordinary professors. Over all should be the academy, controlling all, and admitting the best professors. A year-book should report the progress (a) in method, and (b) in the matter of teaching and discovery. All other universities should be abolished and their funds united. All should center about the Berlin university, which should be free and independent. Schleiermacher was more conservative, and thought the State would have interest completely to satisfy the needs of science, should have the outer administration of the university, but leave the development of science as free as possible, and would retain the old faculties to prevent excessive specialization, give a more general philosophical propadeutic, the fullest freedom in teaching and learning, good and strong old-fashioned lecture courses, and would have many universities and but one or at most two academies. Some condemned all reform as ideology, and said that universities should chiefly teach and fit for practical life. Now some deplore the centralization tendencies that make so many professors wish to die in Berlin or Leipzig, or the excessive rivalry of some and the despair of other States. The practical standpoint of the government and the scientific one of the universities should not be opposed, and at least the rector should know all the details of salaries and special expenses now withheld by the government representatives or curator, although the detailed financial matters left to common boards in South Germany are not desired. A corporation should know more of its own economies than is now permitted it in the *etat*. A term of three years instead of one for the rector is desired. Reform plans for universities often touch only matters of external administration. The problems of investigation, teaching, learning and life are far deeper. Professors have a strange and suspicious dread of thorough pedagogical discussion. They often decline to answer government circulars requesting information, and dread the very great inevitable difference of opinion. Community of scientific work must prevent the partition of faculties, and community of interest of different branches of learning must decide such questions as the Real-school problem. A full chronicle should each year show briefly the activity of the entire university. Each university must have an academy of sciences, like the new "society" in Göttingen, the Leopoldina at Halle, and the Schlesian society of Breslau. Wealthy friends of culture should found these in every university. Outer control, as e. g., examinations, cannot shape the inner development of science. When university culture, science and teaching have been poor, or struck into unfruitful ways, student life has deteriorated so that the latter is an index of the former. Academic luxury, aided too often by old graduates who occasionally return to enjoy boyish licenses of their youth, and dueling, now more often cultivated as a show and excitement for on-lookers rather than as a real affair of honor, as of old, undermine idealism. Only the Wingolf and Catholic corps do not duel, but the practice is on the decline.

Die Reform der Universitäten. JOHANNES FLACH.

The author has almost as poor an idea of German universities as Daudet implies of the *Academie Française* in his *L'Immortel*. Let us hope for his sake his scorn is for a less impersonal reason. The university question, premises Flach, is the greatest problem of our time, upon the happy solution of which depends more than upon that of any other question. Their variations in quality reflect those of politics and business. No one has more frankly expressed the rapid recent decay of juristic studies and legal faculties, nor that of the student *Korps* which is closely connected with it, than the author himself in his earlier pamphlet on "the German Professor." Jurists are the most uncultivated, cling closest to the banausic method of dictation, and their students absent themselves most. Their lectures and the examinations have less to do with the liberalizing studies of history, economics and administration than any other profession with its proper scientific basis, and the State examination covers but a very small part of the entire field. Perhaps most insignificant of all are the professors of Roman law. Law professors dabble in politics and are *Streber* in all directions. This long deterioration in the quality of professors has made judicial decisions so ignorant, so contradictory and so often reversed, that people more and more often take justice into their own hands, and crimes of violence have steadily increased. Press and political decisions are a maze of inconsistencies. New laws and bills are so obscurely and inadequately drawn as to suggest that they were designed to make business for lawyers, and the state officials trained in this faculty are worse and worse.

In medicine, lecture attendance is very diligent and the professors are mostly excellent. But the material of medical study is now so vast that, not only philosophical and even general scientific training in the biological branches doctors should most know, but worst of all, the history of their own professions are neglected. The lack of all but technical and special training in the medical profession is the danger of half-culture. In philology too, there are now few but epigoni left, especially in South Germany. Excessive detail and specialization have caused both scientific and pedagogic impotence, destroyed all general views and with them all interest in antiquity.

The first remedy for these evils, and of course first for the degradation of judges, is a quadriennium instead of a triennium of study, and that, as Gneist advocated, the first part of the course should be general, and end with a mid-examination, such as has borne such excellent fruit in medicine. This would check the spreeing so univeral in the first years of the law-courses. Two failures to pass should exclude from the profession. The course should be sifted and reconstructed by a commission. From the medical propadeutic should be dropped most philological work. The faculties used to appoint, but now only nominate, instructors; and often, especially with jurists, the government has the initiative. Family, friendship, discipleship and other bad motives quite commonly prevent the choice of the best man. This has reduced the once strong faculties to insignificance, and nepotism degrades many professors, whose office should be as free from all suspicion of partiality as that of a judge. Lectures are dull, and can only be made to take a strong hold on the interest of students by more general culture on the part of the professor. All docents should have passed the state examination. To improve the standing of the doctor's degree more stress must be laid on the thesis and its scientific quality. Wealth and much society tend to lessen every professor's interest in his work. Professors should not be paid by students at all, but all instruction should be free, as now in Athens and many other universities. Professors should not, like singers and dancers, go where and do what brings most pay. Salaries should be scaled from the lowest up, according to the means of the universities.

Plus Ultra, Zur Universitäts-Frage. E. HAUPT, Halle, 1887, pp. 62.

The universities are the palladium of the German nation, the glory of which cannot be too highly praised in abstract, however defective they may be in the concrete. On one side every university should be a sort of academy, whose province is the culture of pure science, or true idealism as distinct from utility. Far more than now it should focus its energies to the pursuit of pure science with little regard for its applications. Thus they will do far more for the practical applications themselves than if these were directly sought. The age when Germans were idealogues is happily past, but the opposite extreme of rushing directly to the useful is far worse, degrades professions to trades, and will destroy the free and independent position of professors. Aristotle rightly said it is the sign of a great mind not to ask after the merely useful. To get the mere raw material of knowledge, universities are not needed. Science is the working over and up of this material. New questions and problems are as important as new knowledge. The scientific style, form, method is the man. This varies greatly in different fields, but is not a mere encyclopædic compend of facts, which belong to repetitories or conservatories. Seminaries, on the other hand, can admit but very few students and hence are the heart of the university. Hospitants should be secluded and each member be taught by individual care how to work independently and to form independent judgments, and thus be placed forever beyond mere *shablone* and tradition and routine and dilettanteism. To make these few elite and to bring them to fullest and most peculiar individuality is thus the function of the university. But it must show the whole field of mental interests beyond individuality. No vocation has more vacations and idleness. More and more of the academic year is given up to vacations. Academic freedom should not prevent the semesters from beginning and closing at the appointed time. Testimonials are too easily and unconscientiously given. Stipend examinations are too lax. The freedom of students has too little guidance. Pro-seminaries, that apply seminary methods to low grades and larger numbers, would help. A good seminary is a sort of family or corporation sacredly keeping alive the traditions of good work. Testimonials of its members can say and mean something. Alas for a graduate who has not both the method and the love of work. The moral danger of universities lies not in the amount but in the kind of dissipation. The student might stand to his profession in the same subordination as a clerk to his chief.

Les Réformes les plus Récentes, etc., F. STOERK, *Rev. Int. de L'Enseignement, Mai 15, 1891.*

This is an account of recent Prussian reforms in legal education. Education is an infinite subject because both nature and mind are inexhaustible. The unity and centralization of the French educational system implies a settled uniformatized body of knowledge. German professors of law have steadily grown dry till they have become only echos. This is admitted even there with a unanimity rare in Germany. The recent history of courts and legal processes, as well as of parliamentary legislation, is a sad commentary on the state of legal training which had become intolerable. In the face of the growing duties imposed on lawyers, and the rapidly advancing technique made necessary by modern business, Prussia has pursued a *laissez faire* policy, in this respect the exact opposite of her policy in other educational fields. Besides prolonging legal studies from three to four years, it is proposed to prescribe parts of the course and enforce attendance. More who elect law do so from other motives than predelection than is the case with other professions. Here academic freedom has degenerated nearest to having large rights with no corresponding duties. Such considerations prompted the Prussian Cultus-minister, M. Gossler, to decree (June 2, 1890), that professors should refuse leaving-certificates to students remiss in attendance on lectures; and for seminaries and practical exercises they might give, when requested and invited, explicit testimonials of assiduity. Candidates must write with their own hand their *curriculum vitae*, an attestation of having served one year as voluntary soldier, state in what courses in the university they took particular interest, and must submit one or more of their seminary papers. The written part of the examination consists of a thesis on a subject chosen practically in accordance with the taste of the candidate, and for the composition of which six weeks are allowed. These State examinations were made public, and two of the students' instructors are given a place on the board of four members beside the jurists. Since April 1, 1891, Prussia is divided into examination districts, each attached to an university. Students choose their districts (and therefore examining boards), freely, but must pass the last semester where they are to be examined. Thus liberty of migration from one university to another, which jurists had come to abuse, was restricted. Smaller universities are made more equal to the larger, to check the dangerous tendency to centralization; and "half-studies," it is thought, are thus broken up.

III.—ENGLAND.

The Albert University.

The speedy completion of the new Albert University in London seems now assured. London and Constantinople alone, we are told, of all European capitals, have no teaching university. Not only the University of London, but the old and powerful Colleges of Physicians and Surgeons, the Council of Legal Education, and the Incorporated Law Societies—all examine but do not teach. The entire separation of teaching and examination is said to be bad, in tending to deprive education of its power of transforming the mind under the influence of great teachers. London, it is said, was the best place to get practical knowledge in law and medicine, but the degrees of the above bodies required the hardest examinations. The want of co-ordination between teaching bodies and the University of London was growing, and was causing both students and instructors to gravitate away from London. The new draft charter of the Albert University proposes a federation between the University and King's colleges, both of which have a fully equipped teaching staff, and ten of the leading hospitals and medical schools of London. These have already consented to become schools or colleges in the new university. The University of London objects to the power to examine and give degrees to those who have not passed *all* their time at the new institution, protesting against the principle of reciprocity of residence for half the course, although the sphere of the latter is limited to a radius of 15 miles from the Somerset House, while the University of London can examine students from the entire kingdom. The College of Physicians and Surgeons objects that as it has controlled medical education to a large extent for three centuries, correcting even the defects of the universities, it should control the medical faculty, and will not recognize the power given to the hospitals and schools. All federating bodies and the faculties, or boards of studies, are represented in the council of 40, which controls all. Although 16 members of this council are teachers, it is probable that but little actual teaching will be done at any central location just yet. Certificates of proficiency are to be granted to Extension students. The door is left open not only to any of the hesitating bodies to come in, and take seats in the Council, but the four Inns of Court can come in and establish a law faculty. Other hospitals may join, etc. This ought to become in time one of the largest universities in the world. The 41 London hospitals are so scattered that they can never make their wealth of material so accessible to students as does the massing system of Vienna, or even Paris and Berlin. Besides there is, so far, no provision for reconstruction and new chairs, nor any enlargement of the philosophical faculties. The entire scheme is on a much less elevated plane, and has no trace of the scientific ardor which has animated the policy of higher education in France for the last 15 years, culminating in the new bill constituting true universities there. It is rather a repetition with important modifications of the general scheme of affiliation rather than federation which is represented in the Victoria University.

Das Universitätsstudium, und die Ausbildung der Juristen in England. Dr. B. F. Aschrot, Hamburg.

The Reformation affected English university life less than on the continent. After the monks lost control of the universities the latter became independent, self-managed corporations, and were given seats in parliament. As higher official stations depend on party, politics is not a profession with assured careers, and for which laborious preparation can be made as for other callings. Theologians had their seminaries, doctors their hospitals, and jurists their inns, so that only general culture was attempted at the universities, and there was no division of faculties. Law entered the university with Blackstone, who was its first professor, on the Biner foundation (1756.) Before, only Roman and canon law had been taught there. Those *servitors* among the students who had passed good examinations were given scholarships, were called exhibitioners and ranked with the gentlemen commoners. In and after the 18th century the universities deteriorated. Durham (1872) which is theological,—London and Victoria Universities, which have neither teachers nor students, but are examining boards, receiving all without reference to where or when their knowledge was acquired, University College (1828, a stock company, unconfessional), King's College (1831) its conservative counterpart, both imparting general as opposed to professional knowledge, Owen's College (1851, scientific), colleges in Leeds, Birmingham, Nottingham, Liverpool and elsewhere,—all these have extended university privileges to the poorer classes. The reforms of the commission were great. Oxford, which had 307,000 pounds yearly income, contributed to a common university fund enough to establish 48 university professors, and Cambridge with 264,000 pounds income founded 37 of these professorships. The 21 colleges of Oxford elect six members of a common or hebdominal council, and the 17 colleges of Cambridge elect four. These must be heads of colleges, and the professors elect an equal number of members from their own number, and all members of the university who have a degree and draw pay elect an equal number. This broke the all-dominating influence of heads of colleges. The law of 1854 opened Oxford to all confessions. The law of 1856 did the same for Cambridge. In 1871, every university position was made independent of religious tests. Nonconformist students need not attend religious services, and may be examined in philosophy or a Greek author in place of religion. In 1858, the law that compelled every student to belong to a college or hall was repealed. Yet in 1889 out of 3,000 students at Oxford but 370 were unattached. The colleges of both universities give 50,000 pounds per year as examination prizes. For the honor of these the wealthy often compete. Fellowships yielded 101,000 pounds in Oxford, and 103,000 pounds in Cambridge. The reforms abolished life fellowships, and divided them into two classes, official and ordinary. The latter cannot be given for more than seven years, and yield 200 pounds. The holder can marry or not and can reside where he will. The official fellows are tutors, lecturers, librarians, etc., and can double their regular income (200 pounds) by these services. Only a small and fixed per cent. of them can marry. Soon after admission the student who is not from one of the great secondary schools is tested (responsions in Oxford and previous examination in Cambridge) by a standard not much above the Unter-prima in Germany. The student must then elect between the freer pass course and the higher, more specialized honor courses. About equal numbers choose each. The tutor then tells the student what to read, what courses to follow, etc. The practice of attending the best courses in other colleges is growing and beneficent. The course is three years. Each year is divided into four terms at Oxford and three in Cambridge. One, or one and one-half years after the first examination, the second (first public at Oxford, general at Cambridge), and at the close a third (second public at Oxford, special at Cambridge) examination occurs. At these the requirements for pass and honor men are increasingly *different*. The relation of the universities with politics are close. Three-fourths of the members of parliament are from Oxford (conservative) or Cambridge (liberal), and in the students' debating clubs parliamentary usages are observed and political questions discussed.

When at the beginning of the 13th century judges by profession arose in England, common or English law had to be taught. These teachers were so sought that soon the four hotels or inns (Inner and Middle Temple, Lincoln's and Gray's inn) were built. Each has lecture rooms, library and chapel, and is an independent corporation. Students here correspond to scholar at the university, and barrister (or advocate) to fellow. In the dining-hall, behind a bar, sit the judges on their benches (benchers). Before the bar, called to it, stand barristers who have studied eight years. The solicitors see clients and prepare briefs. The lectures and disputations gradually ceased, and legal education became so narrowly technical as to have little value, and students and benchers and judges only met at the commons table. In 1851, the four inns united in the council of legal education, composed of 20 benchers, and many reforms have been effected. All candidates must pay fees very heavy even for England. Only the few who do not come from one of the great foundation schools or an university are examined for admission. Three years' study is required; and six, or if the student is also attending on university, three weekly meals at the inn are required. The first examination is at the end of a year and is only on Roman law. The second covers common law and equity and the philosophy of law. For the latter five professorships are established, but their lectures are not obligatory. Students who have acquired a degree in law are excused from the first and from some subjects in the second examination. For graduates six months' residence usually completes the second examination. Many students come down to meals during their university course, and take their scientific legal training only at the university. Practical training is usual, but not required. The more common practical course lasts three years. First, the student goes to a young barrister, who for a high fee can give him much personal time, then to a large office, and finally to a specialist. This "reading in chambers" is so expensive as to make the legal profession exclusive, for Inns and Council together give but 3,050 pounds in prizes. It has been proposed to require 300 pounds annual income of all candidates for the bar. In Germany, the author tells us, most lectures on law are an anachronism; and instead of prolonging the time of students at the universities, or increasing the frequency of examinations or recording attendance, he proposes better lectures, coaching tutors who shall have entire charge of the student for one year to fit him for reformed lecturers, and seminaries without examination, where promotion depends on the judgment of the seminary director. Excellence in one thing is a better criterion of mental power than mediocrity in two. Three per cent. of the 6,455 German jurists should also be detailed to watch and individually direct the student. Thus legal theory and practice could be more fruitfully joined.

Like *Le Progrès Medical*, the *Lancet* of London has an occasional number, commonly in the early autumn, devoted chiefly to medical education. The last student number of the *Lancet* is of unusual interest. Its opening article exhorts each student to examine very carefully the various medical schools and universities before selecting which shall examine him. From its many articles we note the following items: The General Council has decided that all students not registered before 1892 must take after registration a five years' course before they can practice. The first part of the course is to include biology, chemistry, anatomy, physiology, and the last part is devoted to hospitals and specialties. There must be four examinations during the course of study. A student who fails to pass may be exempted from a second examination on all subjects where his marks are over 60, the pass being 50. Pharmacy, psychological medicine, both so rapidly growing, and the examinations now required of all foreign doctors in most European countries, are dwelt upon at length. At Oxford, the degree of B. M. is given after an examination, (following that for B. A. or M. A.), in the pure sciences that underlie medicine and a few practical subjects, and D. M. is given after three years' practice and a thesis. A diploma in public health is given for sanitary law, engineering, hygiene and vital statistics. In Cambridge there are three examinations for M. B.: 1. Chemistry, physics, biology. 2. Human anatomy, physiology and pharmacology. 3. Practical chemical subjects. The degree of M. D. may be taken three years after M. B. and that of M. C. two years after B. C. At the University of London there is an intermediate examination two years after the preliminary, and for M. B. the student must have passed at least four years at an institution recognized by the university. The examinations of the Royal College of Physicians and Surgeons do not require biology or zoölogy at all, and require anatomy and physiology to be passed together. Every candidate for finals must be registered 45 months beforehand. Five of the 41 London hospitals have residential colleges attached, and Mr. Thomas Cooke's school of anatomy, physiology and surgery is well equipped and "recognized" for fitting for higher medical examinations. There are seven Scotch, six Irish schools of medicine, and eight provincial English schools. There are about 225 medical scholarships attached to the medical schools and hospitals in England. These are mostly given after competitive examinations. More than half specify subjects which are about as often purely scientific as classical. The steady growth of chemical science is recorded wherever this department has been established. Four years of study for medical degrees are now required at most British universities, and five at Cambridge. Nine of the hospitals in London now unite their forces to give post-graduate courses for practitioners.

IV.—UNITED STATES.

The Origin of the National Scientific and Educational Institutions of the United States, by DR. G. BROWN GOODE. 1890. pp. 112.

Early in the 17th century Boyle, Bishop Wilkins and others proposed to leave England and establish a society for promoting knowledge in Connecticut. Such men were too valuable to lose, and Charles II established the Royal Society of London in 1661 and retained them. For more than a century there was a central national association, of which most eminent American men of science were members. The first permanent one in this country was the American Philosophical Society, 1769. Washington and Adams believed that scientific institutions are the best lasting protection of a popular government. The American Academy, 1780, due to John Adams, was to cultivate "good humor" as well as science, was after the French, as the Philosophical society was after the English model, and has not injured Harvard College, as was feared. Quesnay's scheme for an Academy of the United States of America, at Richmond, 1788, had many indorsers, and even a building and one professor, but miscarried because it was fit only for a great metropolis, but might have been a French stronghold, comparable to the influence of the Jesuits in Canada. When Washington became president 100 years ago, he, Jefferson, Franklin and Adams were members of the philosophical society, and were profoundly impressed with the necessity of diffusing knowledge. Besides the two societies above there were then only Bertram's Botanic Garden, Rittenhouse's private Observatory and Peale's Natural History Museum. Many leaders felt that the new republic could not succeed without a federal university, which to some seemed both naturally to precede, and to be more important than a general school system. The university ideals of that day were profoundly academic, and embraced expeditions, research, memoirs and international features, but they were also utilitarian and practical, and thus vague and contradictory. Much of these general ideas was realized in special institutions. The patent office dates back to 1790. The best and ablest men carefully scrutinized each point of the earliest patents, and among many applications but three were patented the first year. Thomas Jefferson, later, in 1793, feared it favored monopoly and was un-republican. The building of 1812 and its valuable records was destroyed in 1836, the year in which most of the present methods were adopted. Its company of experts is now among the best in the world. As vice-president, Jefferson made original contributions to science in a fossil quadruped, and later he made collections of bones in the White House, for which even W. C. Bryant criticized him severely. (See his poem "The Embargo.") One plan, (1788,) was for a central and higher university which should fit graduates of state institutions for public life. It was to be so national that "even modern English books should cease to be the models of style in the United States. The present is the age of simplicity in writing in America. The turgid style of Johnson, the purple glare of Gibbon and the studied and thickset metaphors of Junius are equally unnatural, and should not be admitted into our country." The degrees at the new university should receive a new name, and the studies should be modern and not antiquarian. "Then will begin the golden age of the United States." Without it Union will be a rope of sand. Barlow's plan, (1806,) resembled the House of Solomon in Bacon's new Atlantis, and was also to be at Washington. The patent office might be under a professor and the chancellor might grant patents. It should print school books, expose adulteration and impostures, direct traveling missions, control a literary fund for poor authors and their families, and include all fine and useful arts. Political research ought to be its chief function—just the class Napoleon abolished in the French Institute. It should open the vast ranges of mineralogy and botany awaiting exploration here. Such an institution alone can save us from the dangers arising from our extent of territory. Prejudices now dense and dangerous as a thunder cloud will slowly become as tenuous as the tail of a comet. The Columbian Institute and college, (1819-21,) were actually organized and given $25,000 by Congress in 1832. The Coast Survey really originated in the act of 1807, began in 1816, and was re-organized in 1832. The history of the Smithsonian, Meteorological Bureau, 1871, Bureau of Weights and Measures, 1815, Observatory, 1842, Botanic Garden, 1852, Geological society, 1819 and 1840, and later the Survey, 1879, and National Academy, 1863, are briefly sketched, while expeditions both to explore the unknown west and to other points have been organized. The establishment of each of the above departments has been the fruit of patient work. Congress has always been conservative and has never made a large appropriation for any new and untried scientific scheme—as other governments so often do. The Morrill (1862) and Hatch (1887) bills distribute large values so widely that comparatively little organized work has been done. The "scientific Renaissance that originated in 1859 with Darwin's origin of species," has been instrumental in producing many scientific societies, yet 14 states and territories have no scientific societies of any sort. Much space is devoted to the Department of Agriculture. A government that has appropriated 150,000,000 acres of land for scientific education is at least in advance of the best European governments, which, although they had savants, did not know the value of science, as did the Greeks and Arabs. We have now 46 agricultural experiment stations, employing 400 men. Our scientific publications are often commended elsewhere. Agriculture (1862) has a good staff of botanists and chemists. The migrations of fishes are studied with excellent facilities, and many hope for much aid to science from the Farmers' alliance movement. The Army and Medical Museum (1862), the Bureau of Education (1867), Fish Commission (1870), Bureau of Ethnology (1879), show that the attitude of our government is becoming more and more in harmony with the views of its founders, and sees in the words of Washington, that "in proportion as the structure of a government gives force to public opinion it is essential that public opinion should be enlightened." Nearly all our States have historical societies, but only 12 have academies of science. With six exceptions, every State has had a State college of its own within 20 years of its admission.

Reports of the Regents of the Smithsonian Institution for 1888–9.

These two volumes were issued together late last spring, and are important as the first Reports of Secretary Langley. In the first volume the secretary says in substance that the care of the Museum and the Bureau of Ethnology is enough for an institution devoted to the advancement of pure science, and that its superintendence of the Fish Commission, with its utilitarian interests, and still more so of other government departments, would be a mistake. The Smithsonian income is growing less with the decreasing interest of money, and should be enlarged. Besides the income of over $40,000 from its fund, $200,000 to $300,000 more are appropriated by the government each year to be spent under the direction of the secretary. Nearly $200,000 per year is spent on the museum, of which the secretary wishes to be released. In passing from Professor Baird to Professor Langley it was desirable that physical work should share the prominence formerly accorded to biological. A new astro-physical building is desired. So many other channels of publication are now open that the number of original memoirs offered the Smithsonian for publication has steadily decreased. The appendix, giving an account of the state of science, has become so expensive that it is suggested that Congress assume the expense and devote the space to science and its practical applications. All reports of the "progress of science" during a year must be slow, hard and late, and the memoirs are few and are now used mostly for exchange and sale. The exchange system, which the government has also utilized, is a burden, requiring new and greatly enlarged lists, etc. About 250,000 volumes of great value were thus accumulated, and in 1865 given to the library of Congress. A plan for a zoological park is presented. Among the many reports of scientific progress for the past year none are better then those of Prof. Abbe on dynamic meteorology, and of Dr. Scaife on geographical latitude.

In the general appendix of the last volume, which constitutes the body of the book, in place of the usual surveys of progress, select and important articles are printed. These begin rather unfortunately with a brief epitome in about fifty pages of the magnificent volume of the Cultus minister of Prussia on the scientific institutions of Berlin, (p.342) a volume which hardly lends itself to abridgement, especially without any of its many cuts, and which should be digested, if at all, in connection with its companion volume, still larger, of university statutes, which is not mentioned.

Geographical and Geological Surveys, by J. D. WHITNEY. Cambridge, 1875; pp. 96.

These papers by one of the very foremost contemporary geologists, who has had a long experience with government work, are still of the highest significance and value.

I. Geographical. European nations are vying with each other in expeditions to explore the unknown parts of the globe. Far more important, but far less known, are the great topographical surveys, where accuracy and minuteness in maps are the ends. The most accurate map is a model of clay, reproduced in plaster or of superposed card-boards.

Where there are high mountains this is especially valuable. These are expensive and not portable, but can be photographed by oblique light. Maps vary in size from one hundred millionth in the school-boy's map to one thousandth, the scale of the ordnance map of London, which shows the size and form of every house and lot. Belgium e. g. again, where the population is nearly uniformly distributed, needs far less variety of scale than our country or Sweden. Thus with the scale the amount of information and detail exhibited vary. The vertical element may be represented by *hashures*, the direction of which shows the direction water would flow, or by longer lines the thickness of which shows the angle of the slope, or, now that business needs for maps have surpassed the needs of war, by contour lines, which fall nearer together as the slope is steeper. The datum is usually sea level at low or at mean tide. Far more laborious is the survey. Two base lines, one 5.4 and one 8.7 miles long and 208 miles apart were so accurately measured by our coast survey that the error was less than four inches. The angles too must be accurate, and primary triangles have sides often of 50 to 100 miles long. This is very laborious, very expensive, and requires the best instruments. Secondary and testing triangulation does not need to be so accurate. These points are fixed, to which all is referred. After a good account of surveys in the European States, an interesting history of the early explorations and surveys of our own western territory is given, with special attention to the epoch making explorations of Fremont. Then the rush westward at the outbreak of the Californian gold excitement, the western railroad surveys, those of the engineers' Bureau and the land office, the coast survey, the 90th parallel, etc., are described in a way which shows wasteful duplication and in one case triplication of work by the government, grave inaccuracy, non-publication of surveys made at great cost, errors of probably miles in even State boundaries. Bonneville's admirable private expedition, that was probably not known by Fremont, who rediscovered the same region, the probable cannibalism of the last Fremont expedition, the wretched work on the boundary line between California and Nevada, the failure to publish the Reports of Macomb, and that of Warren (1857), the chronic difficulty with longitude, especially in the hands of the incompetent, the sudden arrest of surveys like that of California in 1874 by the Legislature, the designation of the barren Northwestern region as a continental wheat garden, the statement of the land office that its careless guide meridians are run as exactly as human skill can effect and attain, the lack of any even passable maps of the Appalachian region, etc., are samples in striking contrast with the excellent work of the coast survey.

II. Geological. Here especially the body of facts is so large that an individual can hardly handle them. Save astronomy, governments aid science but little save where practical results are probable. They aid it often fitfully, as England, e. g., after years of indifference awoke to the need of Arctic exploration. The transit of Venus and eclipses are subjects that have gained a strange traditional favor among governments. The history of government geology in Europe shows great wisdom, and so wise work has been done because the State there long had sovereign right to all metals below the surface. Since the great excitements and reckless expenditure connected with sudden discoveries of mineral wealth, European States explore and survey to prevent this vast waste. The mining corps of France, 1781, was followed by the school of mines. Graduates of the polytechnic school enter there and are afterwards appointed in government mining service in the order of rank at final examinations. The government also publishes a mining journal, and controls all underground mines as distinct from surface work, quarries, etc. Only in 1840 was the great English map published, six feet square, and with 1,113 different symbols. So in Germany property in minerals is distinct from that of the soil. Here borings, in one place 4,300 feet, have given a great impetus to geological studies. England has a museum and mining schools. In this country miners could not be controlled and almost nothing was done till the remarkable laws of 1866 and 1872. All lands were free and local rules and customs were enforced so far as not illegal. "Square claims," limited by vertical sections, were enforced, etc. So little control is there that the Report of the Commissioner of Mining in 1870, and the census of that year, placed the national gold and silver products, one at 61 and one at 26 million dollars. The national mining school, often proposed, would be bad. Studies in geology and mineralogy here have followed the mining booms. Our Legislators have been entirely unable to grapple with these vast problems. There has been duplication and vast waste, yet the government has had not a few very able and efficient men, and has done some superb work; e. g. the volume devoted to the Comstock lode. Science in general was in a low state, and States felt that their surveys were to be done once for all, instead of never bringing this work to a close. Before geological exploration can have value there must be an exact and fixed frame work in the shape of a topographical map, or all is a tentative reconnoissance. Our mining future will be that of Mexico and the once rich South American states if better work is not done. Massachusetts least needs a very extensive geological survey, but, as throughout New England, the surface is so broken and the rocks so edgeways, that a thorough survey would be of great expense. The State should endow a chair of economic geology in a first class college. To do any great work of science will require the very highest intelligence, and it will be long before the average voter will be educated up to it. What is the practical value of all these surveys so far? Have they prevented the vast waste, as great perhaps as in agriculture? Could we not have a mining school for our legislators?

Reports of the United States Civil Service Commission.

These Reports are of great and growing value to all those who take an intelligent interest in education. The scope and purpose of this reform have been so often and widely misunderstood and even wilfully misrepresented, and it has been invoked to compass objects in no way related to it, and its classifications and rules are so complicated yet so carefully and laboriously wrought out, that their study cannot be too strongly urged upon students of pedagogic problems and institutions, who will find the fullest exposition in the fourth report printed in 1888 in 731 pages. The problems of holding examinations at convenient points in all states and some of the territories, of apportionment of appointments in such a way as to satisfy all localities, of uniformatizing standards of eligibility in all States, and even of centralization and therefore of uniformatizing the reading and marking of examination papers have all made commendable progress. In preparing the thousands of examination questions the commission has been disposed to insist more and more upon tests of just the capacity to do the duties of the position which the applicant seeks. A letter carrier, e. g., receives two-thirds his marks upon the knowledge he displays of the streets, prominent buildings, etc., of his city and his skill and quickness in reading addresses, and nothing not at least of subordinate importance for his practical work is admitted. The commission has even tentatively dropped all questions in geography and history from the examinations held for clerks, copyists and letter carriers, places which include the great bulk of all the posts to be filled. During the year ending June 30, 1890, 5,415 appointments were made from 13,947 who passed civil service examinations that were so severe that 9,047 others who tried to pass failed. The classified civil services now contain over 30,000 government employees. Recruits from the unclassified service not protected by the civil service rules are about seven-fold those from the classified postal service.

The department service at Washington is best controlled and that of custom houses least. Although the appointing power can reject two-fifths of those highest on the list, those appointed have been largely of different political faith from the party in power. The State quotas are now nearly even; the eligible registers are not crowded so that there are enough to supply average vacancies for but few months in advance. The commission here wants its own board, with outside or local boards responsible to it, and an all-controlling board of 20 examiners at Washington. It wants to control all post offices with 25 employees or more, instead of those with 50 as now. It wants outsiders as well as office holders forbidden to solicit political assessments; more money for travelling expenses; objects to entrance to its places by transfer from places not covered by its tests, and believes its merit system the only truly unaristocratic one; reiterates its faith in the six months probationary test, although but about one in fifty is dismissed at its close, and believes in holding high standards for higher technical positions. The average age of its applicants is 28 years.

Dropping the tests for geography and history almost takes out the heart of the reform, for these are about the only subjects that could be called liberal, and the only ones that give our civil services even a rudimentary analogy with European systems which are so efficient in securing the best ability for the services of the government.

Cuts of nearly 400 American College and University Buildings, mostly taken from catalogues and circulars, lie before me. The collection does not embrace many buildings of the few dozen largest institutions, save in the case of the catholics, whose buildings are more invariably represented in their catalogues, and are commonly dignified, often large and imposing, and in no case mean. In my somewhat random collection are 14 buildings that are both recent and tasteful. First in importance and usually in time comes the central or main building, often large and several storied, containing class rooms, library, laboratories and in some cases dormitories. The next most inevitable building is the dormitory. These two often constitute all the architectural possessions of the college or university. Whatever may be said of the main building the dormitories are often constructed without comfort or regard to the rudiments of hygiene, and with very insufficient air and light, and are badly heated. A chapel and an observatory are next most frequent, the former of course far larger and more expensive, the latter favored because of the supposed religious tendency of astronomy. Next comes a "Science Hall," where the more common sciences are taught with illustrative apparatus on which the students are sometimes permitted to practice, and in a number of cases they are photographed in the act for the catalogue. Next comes a library and industrial or technical building. These superficial statistics probably represent also the average history of development of many of our smaller colleges. The latest stage of evolution is probably represented by a separate building for each of the leading sciences, a gymnasium, perhaps a museum building. Very few indeed of our institutions have even entered upon this stage of differentation, and even they are all, without exception, far behind the differentation of the medical buildings now so common in Germany, where we often find one each for gynaecology, ophthalmology, pharmacology, anatomy, pathology, physiology, surgery and sometimes still others. German Universities provide residences for heads of departments in their buildings, as well as for assistants and servants, but never in any department for students. We conversely commonly provide dormitories for students but almost never for instructors. In but three cases of my 400 American buildings is any ground plan given, but only the elevations, the latter represent only the outside appearance, and the former the usefulness and healthfulness of the building. Here again our custom is the converse of the Germans, who in illustrations of new buildings lay all the stress upon the ground plan. How many of our smaller colleges would venture to print the ground plan of their dormitories? Most of our buildings for higher education have been built with little study or knowledge of what had been done, or what experience had proven good or bad elsewhere, while in Prussia, the minister states, that every new construction is preceded by a very careful study of all that could be gathered everywhere on the subject, and there is a well developed tradition in each department and journals and expert architects. Probably all the buildings together of any one of our largest Universities would not equal in cost that of either the new polytechnic building in Charlottenburg near Berlin, or the new main building of the Vienna University or the new Sorbonne, which was between three and four million of dollars each, although labor is cheaper than in this country. We have no reason however to be discouraged, because we have not the vast resources of the State behind our higher institutions of learning. Not only has some of the best work been done in small and mean quarters, but many of the wisest friends of learning look with great apprehension towards the future effect upon science of the present extraordinary era of university architecture in so many of the countries of Europe.

We have made great progress since the epochal year of modern education, 1870, and the prospect of greater progress never seemed brighter.

V.—MISCELLANEOUS.

Die Reform der Russischen Universitäten. Leipzig, 1886. pp. 246.

This anonymous book is written to explain the law of August, 1884, reconstructing the Russian universities, which the professors thought robbed them of much of their freedom. Plato said that people who receive too great or sudden freedom accuse the government that gave the freedom. So here, those who were lately serfs were given trial by jury, which they used as a sovereign right of pardon, and the university laws of 1835 and 1862–3 were passed. Extreme liberals said that the university laws must break all historic continuity and become only a place for public lectures, which all may attend. They deduced that the function of the educated classes is to give their learning to the masses; that the ministry of education was an optical delusion; that its sole function should be to provide places for lectures, libraries, museums, etc., collect fees, pay professors who should make and enforce laws and do all the rest. The growing indifference of professors and decay of universities was ascribed to lack of autonomy. Unripe ideas and scientific stagnation and indifference of society to science increased. Faculties grew self-complacent. Student disorders—always inversely as intellectual activity—abounded. All the freedom of German universities was demanded. On the other hand, since 1870, Russian antipathy for German patterns has increased, and even in Germany a disposition to set bounds to academic freedom in some directions has been marked. When the need of radical reform was clearly seen, Tolstoi, the minister of education, began with the utmost caution, by asking each university what items of the law of 1863 needed reform, specifying that it was his desire to advance science by the most effective way. Most replies from professors pleaded for more pay, more pensions, more instructors, more fellowships, and other minor changes were proposed. Tolstoi could not assuage the bitterness of radical reforms by better pay, like his predecessors, for there were no available funds. Student outbreaks increased and became more political. These were due to light spirits, to the recent emancipation of the next lower classes, to the fever of reformation inherited from the preceding generation, and to the decline of religious training, to the decay of external or elevating elements in recent national literature, the prevalence of satire and the flippancy of society—which the late classical revival might have improved had it not gone to seed in syntax. Everything is dead, or at least sleeps, feels the Russian student, and only youth can arouse things to life. Easy degrees, easy going professors, favor the illusion that students are to save the fatherland. After the great student outbreaks of 1874, the Czar ordered a special inquiry. His committee reported for limiting the authority of the professors by referring to the government certain disciplinary and administrative matters, for a new mode of appointing professors, for liberty of government scrutiny of the character of instruction without restricting the liberty, for an outside examination commission for graduation, higher entrance examination, and for making good conduct a condition of enjoying university scholarships. These were the substance of most of the chief reforms at length passed in the law of 1884. Student committees to the authorities were forbidden as in Germany. A committee of actual visitation, hitherto unknown, studied all seven of the Russian universities on the spot, including Dorpat, which had its special statutes of 1865. About 450 professors answered set questions, and expressed their minds freely at large before the members of the committee, and all was exactly written down. They did not visit the university of St. Petersburg lest their presence should excite student outbreaks against them, so bitter was the feeling. Here the professors answered briefly, or opined that their response should be collective in faculty, and most thought the law of 1863 should not be changed. This matter was digested and printed in 1876 in a heavy government volume. The new commission sat first in 1877, held 25 meetings, and then special committees worked out financial and departmental details. Youth, it was felt, needs high ideals and mental and moral interests, and should live in an institution where traditions correct and do not encourage their natural tendencies to error. The repose of work, and severity of judgment, and brightest hopes must grow. Against all reform the rectors in the committee formed a solid minority of opposition, yet the project of the new statute was complete, and ready for the parliamentary council in 1880, when Tolstoi suddenly left the ministry. His successor issued a circular to the curators, saying that to make science bloom it must be loved by youth. If their excesses injured its dignity, and that of the universities, the latter under the almost unbounded liberty of the law of 1863 had the power and duty to correct the evil, especially with the moral authority which science gives her priests. Finally another committee conferred for six months, and at last by a small majority rejected the idea of outside examiners and of government appointment of professors, but mildly approved the other chief items of the bill. They would give increased powers to the rectors rather than the State, and resolved that the laws regulating student life were too unknown to bring the universities into the path of normal progress; that university progress must be very slow at best, etc. The Czar, however, after very careful advisement on both sides overruled the majority and ordered the law enforced.

Under the law of 1863 the curators had little to do but to inspect the records of the meetings of the faculty and correct and inhibit whatever of their enactments were inconsistent with the statutes. Great authority was meanwhile claimed for the rector who was himself a professor. The latter, however, seemed to the government to sometimes lack moral authority, and so by the law of 1889 the curator, who resided at the university, and represented the crown, was given largely increased powers, became a social leader and a benefactor rather than a president of the university. Some would give to the curator such powers that he could be held responsible for the entire welfare of the university. He should attend all faculty meetings, etc. This was not carried, but he was given charge of all material of instruction, and made responsible for disorders, and could intervene in all special and exceptional matters. Again should the rector be *primus inter pares* and chosen annually from the faculties in rotation, or named for a long period? It was determined that he "report" on the work of individual professors, but not suggest promotions, and that he must look after the organization of instruction and discipline. In the present abnormal state of the universities, when the professors opposed every change, it was finally decided against the majority of the council that the rector should be appointed by the Czar and the deans by the minister. This was done because there must be regeneration of faculties. Much of the instruction had become not only unscientific but harmful. This no elected rector could correct. Dean, rector, curator, were an imperial hierarchy, a court of appeal. Even the rector could admonish professors. Thus it was hoped the abnormal laxity of the universities could be remedied.

In France and Germany the minister often only countersigns the nominations of the faculty for new professors. In Germany, especially, the minister has always insisted on the right to go outside the nomination of the faculty. If faculties choose their own members there are soon realized all the dangers of a close corporation, a narrow field of view, suspicion of all that is new, corporative instead of scientific interests, exclusiveness and sterility. By the law of 1835 a professor was dismissed with a small pension, but he could become a candidate for re-election, and if chosen could remain for five years, and, by the law of 1860, for one or more subsequent quinquennia. Now he may remain or not, as he will, the first five years after a quarter of a century service, and then his pension is increased, but after that his chair is vacant, although he may lecture if he will. The first appointment is by the government, with such advice as it may seek, or with none. As to student discipline, the great uprising of students in 1881 showed how inadequate was the University court. In place of the university judge and court which were abolished, stood an inspector with his assistants, the former directly under the curator. Serious offenses were promptly tried before the inspector, rector and dean, the curator himself presiding. The pay of inspectors was high, and in each university was also a secretary of students' affairs. A series of progressive penalties was adopted, ending with the *censilium abeundi*, which could never, as before, exclude for a term of years from all universities.

As to instruction departments differ greatly. In medicine, far too many lectures were given, and specialties had crowded out the fundamental practical parts, syphilis alone having one-third more time than either anatomy or physiology. In law too little was given. Courses were almost lost sight of. Every university and even every professor followed his own personal inclination, whether to make instruction serve his own scientific work or his own lucrative practice. A three years' course in philosophy culminated in St. Simon, Enfantin, and Ch. Fourier. In history and philology there was the greatest disproportion and many gaps, etc. All this is shown by copious details and statistics. The ministerial approval of the annual scheme of lectures had become formal. In place of the old government plan of dividing work into annual courses, subjects were split into disproportionate sections and independent department courses, a number of which often had no students at all. Scientific interests of individuals were too little regarded, and the training of future servants of the State was too poor. Students came to the university late, and lectures began late and closed early in the year; but few attended lectures, for as the universities were State institutions, science seemed officialism to socialistic students. The business of preparing and selling lithographed lectures, corrected by the professor, flourished. Amusing stories are told of the failure of later instalments of them to arrive in time. Final examinations prescribed by the State, and annuals left to the universities, both required the dean and leading professor of the chief specialty to be on the examining board, and rules prescribed the time, etc. Here too, were many abuses. Often students were examined in masses so large it was impossible to control them. All was left to assistants; examinations were held too early and too late; special examinations, even for individuals, were common; exceptions of all sorts had become a system, and as many as one-third and in one case 17 in 20 were absent at the regular examinations. Of 60 examiners only 12 failed to pass students. The trifling compulsory work for all in theology and modern languages was slighted. Sets of examination questions were circulated, and if a professor went outside the list he was accused of chicanery. Nearly 70 per cent. of the students were admitted to the grade of "candidates," designed only for the best few who were to become professors or experts, and thus were placed on the 10th instead of the 12th rank in the civil service list. A long list of absurdities and errors found in class and lecture room by a State visitor is given to show how poorly trained were the average instructors, how lost they were in details—not strange when Gräfe confessed that he could not follow the progress of ophthalmology, the science he had almost created—and how necessary was the strict revision and supervision now enforced, although also against the vote of a majority of the commission.

Whoever controls examinations controls studies. This the State, which has such need of talent must never entirely surrender, as the Russian State, with extraordinary self-renunciation had done by the law of 1863. This right had to be resumed in 1884, less for the State's sake than to rescue science and study, by the creation of government boards of examination. In Germany the law of 1867 permits State examinations in medicine either by a State or university board; in the philosophical faculty professors examine; in law half the board must be lawyers. Meyer plead for a general preliminary examination half-way in the course like the *tentamen physicum* of German universities. Nasse plead for more oral and less written work, and Sarwey desired two State examinations, one scientific at the university, and a later practical one. Examinations will always tend to give a cram character to study, and therefore will never make students work steadily and methodically. To distinguish the results of long steady work from those of a spurty cram is hard. The State examination does not rob the faculty of the right to use examinations as pedagogic means. The *école normale* has no examinations yet its work is excellent. Students will choose the courses of examiners, so the position has pecuniary value. A student from another university must hear its professors' lectures before he can pass an examination, therefore it would be hard to pass the papers of an unknown examiner, it was said, harder even than if, as in lower schools, the matter were common and in books and not made the professor's own. To make the universities as they should be, "the best types of all the higher national institutions," there must be an examining board quite distinct from the instructors, despite the almost unanimous and violent opposition of the professors' party. The law provided for five sets of boards of examination, historico-philological, physico-mathematical, legal, oriental and medical. Again, if freedom of teaching has led to bad results, freedom of electing and attending courses is worse yet. A program was therefore prepared and enforced in each department to which the student must adhere, unless he had special permission to deviate, but he may hear lectures in other departments. The rapid fungus growth of petty scientific specialties in Germany now produces reaction to fewer studies. The semestral division of the year was abolished, as was obligation to attend lectures. Seminaries were established and professors were given additional pay to conduct them. Aids to poor students had been indiscriminate, and pauper students had increased, and with their crude, wild ideas and feeble intelligence had demoralized the tone of university life. While the pay of professors was increased, students paid regular fees, but the German "honorar" system was not introduced, a careful scrutiny of the German system showing that docent fees were so trifling that the common statement that the docent system depended on individual fees was false. At last appeared the official norm for each faculty, defining the field of examination in each department. It is a document of nearly 40 pages, and fullest on the requirements for courses in law. This with the outside paid examination board will doubtless result in reducing the memory-cram method of preparing for examination.

On the whole, there has perhaps never been a more searching, or prolonged, or all-sided scrutiny of all questions of university administration than by the various committees, whose returns and reports are in almost volumes enough to be compared with those of the famous English university commissioners. If instruction was too theoretical before, it is now becoming too practical. The third final examination under the new law has just been passed, and even the features which seemed most dreadful to the faculties, e. g., that ancient history could only be studied by classical scholars; that little save *ancient* philosophy was in philosophy—are at least acquiesced in, and professors have successfully offered not a few courses entirely apart from the government scheme of examinations. There seems a growing feeling that it may all be a blessing in disguise, and the programs of each of the six strictly Russian universities which lies before us is admirable, and, as contrasted with those of ten years before, symmetrical. The student outbreaks which have just occurred were confined chiefly to four technical schools, and to the university of St. Petersburg, and have resulted in the suspension in all of about 120, and the expulsion of eleven students. The students have responded by an appeal to Russian society. The writer has conversed with professors at a number of Russian universities concerning this law. Most oppose it, some violently, but the impartial reader of this sketch will see that the government is not without some justification.

The Imperial University in Japan and the Japanese System of Education.

Since the Restoration of 1868, which is year *one* of the new dynastic era of Meiji, Japan has undergone an educational reconstruction which has perhaps no precedent in all history. The records of this extraordinary movement are before us in 17 annual reports of the Minister of State for education, the later ones in English, the last of which is dated the 22nd year of Meiji (1889) and published in 1891, in the English Calenders of the University and in a heavy official volume entitled "Outlines of the Modern Education in Japan," published with many tables in 1888. The number of changes in the system as dryly chronicled in the Outlines has been extraordinary, but they have been less and less radical, and on the whole the system is tolerably settled and complete. Whether as an illustration of wise methods of organization, undaunted energy and patience in the face of great difficulties and opposition, or as a triumphant vindication of the power of education as the most all-transforming instrument of state, the world has perhaps seen nothing to compare with it. We have no space to trace the eventful history of this movement and can only indicate here a few of the salient features of the system as it stands at present. One of the early features of the imperial policy was to send the best native students to other countries at State expense. A decade or more ago the number of these students abroad averaged over 300, now it has gradually been reduced to 21. Most of them were in Germany, Austria, Great Britain, France, Belgium and the United States. They were generally sent to study some special subject and commonly remained for several years in the same place. Most of them returned and became professors, teachers or officials of higher grade, but a few have shown such marked ability that they have been induced to settle at the foreign universities where they studied. On the other hand many of the most promising young men of their countries have been employed for a term of years at generous salaries to go to Japan and teach in their own language and aid in organizing the scientific and educational work of the country. These are also rapidly decreasing as native attainments suffice. Now the University calendars in every department show here a native professor who took his A. M. at Oxford, next a Ph. D. from Berlin, or some American University, or a licencié from Paris, etc. Thus nearly every leading institution of the world is represented in the Faculty, and a most fruitful interchange of methods and ideas is assured. The University, in the narrow sense, consists of the five colleges of law, medicine, engineering, literature and science, and University Hall. Only graduates of one of the five colleges can enter the Hall, in which in the last report were but 23 students. This latter is the apex of the system. Only the best students, able to engage in research, are admitted. They are given livings, and special grants are made them for approved investigations, expeditions, etc. Their fitness to undertake the topics of research they propose and the importance of the subject is considered before their admission, and afterward their work is personally aided and directed by a professor. They must also pursue courses leading to a degree at the latest in five years. The object of the University is to teach "such arts and sciences as are required for the purposes of the State, and the prosecution of original investigations in such arts and sciences." The Hall is chiefly for research, and the colleges for instruction. There is no instruction in religion or theology of any kind. All is immediately under the minister and supported by the State. All fees are set apart to accumulate a fund. The University is situated in extensive grounds near Tokyo, the botanical gardens, the observatory, the marine station, hospitals, seismological observatory, etc., being not far away. An electric light company, a cotton spinning company, mining firms, railways, agricultural societies, various others associations and government departments have established University scholarships on condition that the appointee serve the company after graduation. Not a few private citizens have founded scholarships to advance special courses. There are many loan scholarships. All must wear the college uniform. There are special courses in military science, naval architecture, pedagogics. The library has 180,000 volumes. In a recent anniversary address president Watanabe called the University the guide and pioneer of civilization. The Academy was organized in 1880 with 50 members. Its object was to advance and discuss arts and sciences, and especially educational matters. The members received a small salary and met once a month. Questions are often proposed by the minister, and all transactions are printed. The Academy now has its own building.

There are now in Japan about 26,000 elementary schools. The country is divided into about 10,000 school districts. There are 3,252 directors, 25,000 teachers and 37,000 pupil teachers, the total school population is nearly seven million, of whom nearly half are now receiving instruction. There are 49 middle schools with 602 instructors and 10,441 pupils. There are normal schools, 67 special schools, 90 kindergartens. Very interesting is the educational museum with 25,619 objects, with lecture courses, and an agency for the purchase of scientific apparatus abroad. This latter function is soon to be discontinued, as good apparatus is made and specimens are well mounted at home. The functions of this museum thus somewhat resemble that of St. Petersburg. The school budget is nearly 10 million *yen*, (1 yen=75–90 cents) and the value of the public school property nearly 20 million yen or nearly 461 yen per individual of the entire population. The Department of Education devotes much attention to the compilation and selection of text books upon which the efficiency of instruction so largely depends. Some were made by the normal school, a bureau of compilation makes others. The list of approved books has been 11 times revised. No books can be adopted or changed without the permission of the education department. Says the report "the great question of the present time is to decide the method of supplying text books." Publishers now submit their books and if approved a five year certificate is given them. This can be renewed only upon re-examination. If it is especially good a special certificate to that effect is given, and the compiler is even sometimes rewarded. For the most important text-books the minister of education selects a compilation committee. There are now 10 educational magazines published in Japan. As long as fees are charged, even if paid for the poor by the rich, as is done in some districts, it is feared that education will depend on the fluctuations of crops, unless a fund is accumulated, e. g., by concerted planting of good timber trees as has been proposed. School-banking systems are also arranged. Save Chinese and Japanese language and literature all the culture in the entire system is now European. What may we not expect when China introduces modern culture into her all comprehending system of education? The end of knowledge is defined to be the cultivation of moral character, the development of loyalty, patriotism, courage, dignity and sympathy.

It is very sad to learn that the reactionary party has just succeeded in greatly reducing the annual appropriation and thus is seriously threatening this most admirable system.

Statutes of the University of Berlin.

This ponderous octavo of 756 pages of small type is the first complete collection of its kind. It is compiled by Dr. Daude, the university judge, as a result of an order issued by Dr. Gossler, late Minister of Education to the Curatorium in 1887. It contains all rules, regulations and laws now in force, conveniently grouped and indexed under the captions rector, senate, faculties, under officers, funds, professors, docents, students, degrees, vacations, publications, prizes, stipends, and separate institutions, etc., with many subdivisions. "Whoever wishes," said the Cultus minister, to the writer of this note as he presented this volume (which by the way is not in the trade), "to understand the German universities should make this volume his *vade mecum.*" The laws regulating the French universities are only printed in a series of tomes in the order of their passage. Not only has there been no codification, but the new and old have not been adjusted, and there is much complaint of conflict and interpretation by the Executive. In Italy this is far worse and university legislation has been so hasty and voluminous that there is continuous conflict and confusion. At Oxford and Cambridge the case is better, as we shall see below. In this country we have almost no university laws either by the State or faculties. Everything is left to trustees and president, who are a law to themselves and whose maxim usually is that too many laws, or even rules embarrass administration more than they help it. In some of our faculties it is often hardly good form to quote precedent at all, or at least with any insistance, and thus everything depends upon the character and disposition of individuals in authority, who can do more good or more harm, be more efficient or more inert, than anywhere else.

These German statutes are models of clearness, and the most commonplace curator, or other officer, cannot be uncertain concerning his duty. The Berlin university originated in this century, and its statutes are thus modern. It is large and the statutes are thus many and detailed. In certain classes of clinical cases, e. g., the professor must take off his coat, roll up his sleeves, wash his hands in a three per cent. solution of carbolic acid, not leave the room without washing again, etc. The statutes prescribe each institution to which each class of university publications shall be sent, including doctor theses; contain minute directions for the care of the grounds and buildings, so that the most menial employee is given and must always carry with him a leaflet exactly defining his daily duties and responsibilities. The mode of obtaining leave of absence for students, of securing their own seat in the lecture room, forms of applying for stipends, of letters of recommendation by professors, etc., are all prescribed. So are the subjects and their order in the catalogue under each faculty, and the precedence of each member or group of members in public and ceremonial occasions. "Flat fires," with but three or four inches of coal, are prescribed for heating, a fire drill and use of hose, night patrol, each of the 45 funds into which the less than three million marks comprising the property of the university is divided, the oaths and civil rank of professors, pensions and leave of absence, thousands of other specifications are given in detail. It is from this standpoint that we can best understand the recent statement of a German statesman that the modern university is the highest, best organized, altogether most perfect type of all modern institutions—an ideal Platonic commonwealth.

Cambridge University and College Statutes, p. 763. Oxford, ditto, pp. 793.

These are collections of all the statutes made since the new act of 1877, and approved by the commissioners under that act. Each of them has passed all the stages of being "sealed," privy counciled, passed by both houses of parliament, and approved by order of council. First come the University statutes and then those of the colleges. The former covers terms, length of residence required for each degree, congregations and graces for degrees, elections, forms of admission and functions of colleges, forms of accounts, discipline, etc. Those statutes made by the commissioners take precedence over the ordinances made by the University. The contributions of each college to the university, in the main a percentage of its income, the constitution of the financial board, boards of studies, forms of accounts and audits, etc., are all described. Professors are elected by a board of eight chosen by the senate. Every professor must "devote himself to research" and give a certain number of lectures. The professors of physiology and pathology cannot practice medicine. Each college consists of master, fellows and scholars and is self-governed. All fellows after one year of residence can attend meetings and vote on college matters, and elect masters and fellows, the professional fellow, and one eminent man at a time as non-resident fellow. Before voting, and upon election they take an oath. No fellowship can now be held for a longer term than six years without re-election. Supernumerary fellows do not share any dividends. The seal is locked up with two or three keys held by two or three persons, and cannot be used save by action of a meeting. The sources of income of each college with its rack rents, copyholds, stocks, profits of kitchens, buttery, etc., and the beneficies, and advowsons, and other disbursements are indicated for each college. These statutes constitute the rule of the college and in many items suggest the remarkable monastic "rule" of Saint Benedict. In elections, if there is a tie, those voting for the candidate receiving the smallest number of votes retire. A master guilty of bankruptcy without satisfying his creditors loses his position. A number of fellows fixed within limits in each college are tuitional. Competitive examination is usually a dominant element in the choice of fellows. The fellowships are for a variable term of years, usually from three to six, and they are often renewed for a shorter term. The master and fellows, who provide instruction and worship, and administer funds, may be over ruled and even by-laws disallowed by the Visitor. At Oxford provision is made for about 40 University professors. Each is regulated by a special statute and each has a separate board of electors. Many of these, especially in science, cover ground not covered by the colleges. These are divided into four departments: law, theology, arts and natural sciences, and each department is presided over by its own board. Each reader must lecture at least twice a week for at least 21 weeks, and is appointed for five years, and may receive small fees for informal services. It is the statute duty of every professor not only to assist in the pursuit of knowledge, but to help to advance the University. One class of professors must lecture at least 42 times per year, and another at least twice a week for at least 14 weeks. Christ's College, Oxford, is exceptionally governed by a Dean and Canons. There are many terms new to American students,—subseizars, demyships, servitors, bye-fellows, taberdar, moderations, responsions, lectors, exhibitioners, the hebdominal council, canonries, chapters, probationers, bursars, commoners, precentors and succentors, etc., besides many more that are already well established here. Terms, wealth, buildings, laws, etc., all together make the best of our universities seem as small and poor as does a comfortable church in an American city in comparison with a rich and voluminous old English cathedral with all its appendages. The contrast is nowhere greater than in legislation. Most of our best institutions not only have almost no laws, or even rules, but make it a virtue to have none. In England, as on the continent of Europe generally, statutes provide in great detail for every emergency of internal and external administration in every department.

Ordinances of the University of Cambridge, pp. 510.
Ordinances of the University of Oxford, pp. 487.

These are made by the University "for the encouragement and maintenance of good order and discipline" but are subordinate to the Statutes. First come detailed regulations for all the triposes. The University gives the scientific part of a medical education, and publishes an approved list of English schools of medicine, hospitals and teachers. To take the degree of doctor of medicine the candidate must have engaged in medical study for five years. Many distant colleges, *e. g.*, the Universities of Calcutta and New Zealand, are affiliated. The church of England service in commemoration of benefactors is carefully detailed with much fit and impressive music, and a long form embracing scores of names of former notable donors, institutions and other gifts. The lodging house syndicate licenses boarding houses for students, and their keepers must make a prescribed declaration. Tradesmen, vintners, etc., who violate rules made to regulate their dealings with students are "discommuned." Noteworthy are the number of new funds for the encouragement of research, especially at Cambridge, such as the Balfour, J. L. Walker, Prendergast, Prince Consort, Thirlwall funds and others. No less remarkable is the number of boards and commissions, syndicates, etc., connected with the University, and connecting it with the East India company, the legal, medical and other professional societies, the bankers, and other great business corporations. A large number of the leading men of the land are thus associated with the University.

A. Leroux argues for attaching learned societies to higher institutions of learning. France now seems likely to have seven or eight large universities about and subordinated to which will be as many more. Duruy wished by the above plan to unite the scientific interests of France. The union of different faculties in the same town has greatly stimulated universities. Local learned societies should consider the rector as their natural organ and communicate with the minister through him. He should watch common interests such as libraries, museums, and laboratories. The Rector's view would be broadened. The societies of highest work could interest themselves in the education of professors, could suggest and assist researches for them, and reduce the often bad influence of amateurs, introduce the spirit of science in regions of religious and social chauvinism, suggest and aid to found new chairs and societies. Exchanges of books, journals and specimens could be arranged. Leibnitz had little respect for the Universities of his day and founded societies to keep alive and strong the spirit of learning and discovery. Such a revolution must be slow and spontaneous, but the unity that would result would unite and control the intellectual life of each province, give to each a character of its own, make provincial life mentally and morally attractive and satisfying, where high places in science could be won as well as in Paris, and thus would restore the provincial originality of the 16th century.

Academic Societies at German Universities.

More than a century ago this form of a new academy in an academy was tried in Göttingen which should be entirely devoted to discovery. A society of professors was accordingly formed in 1751 with Haller as president, of whom it was said as it had been of Leibnitz that he was an academy in himself. A professor, it was said, might on the one hand be an instructor like, *e. g.*, Plater, who lectured and demonstrated admirably for 50 years in human anatomy, incorporating promptly into his courses all the discoveries of others but never making or attempting the smallest discovery himself; or on the other hand he might choose a sub-section of his own department where he should bring something new to light, and thus add a new pleasure and consecration to his work. This B. Meyer called the purest and highest form of pleasure. In 1752 the Göttingen society was fairly under way and its publications have continued ever since. It has three sections, monthly meetings Saturday afternoons, selects only the best instructors for memberships, gives prizes, and pays a few of the ordinary members as well as its officers, chiefly a secretary and editor. The reconstruction of this society has just been attempted and has not been entirely successful.

The Leopold-Karoline Academy, founded in 1867 and re-established in 1742, is devoted exclusively to the study of nature and has published its *nova acta physico-medica* since 1757, is now located at Halle and is aided by the government.

The Schlesian society for natural culture, 1803, has a library and 123,000 marks property and capital, excludes politics and theology, and has 10 sections, and publishes an annual volume of proceedings at Breslau.

University Chronicles. For some years the University of Kiel has printed an annual "Chronik" or pamphlet recording the work of the University for the year in all departments. Halle has done the same but has gone to the extreme of condensation as Kiel has of voluminousness. March 9, 1887, a ministerial order required this of all Prussian Universities, leaving them free however as to the form of presentation. These publications give an admirable view of the activity of each institution and are invaluable for the University historian of the future, and all University interests are stimulated, and they show what and how much work is really done in laboratories and seminaries.

In the annual reports of the president and heads of departments of Clark University this custom was first, so far as is known, introduced in this country.

Etat des Ministeriums der Geistlichen Unterrichts und Medizinal-Angelegenheiten. 1 Apr. 1889-90; pp. 228.

This is the detailed annual budget of the Prussian ministry of education, is hard to obtain, and is a most interesting and instructive book for every student of education. The salary of the minister himself is 36,000 marks, and an official residence, and the entire annual administration expenses of the ministry are 1,024,670 marks. The department expended in the year 1890, 91,651,841 marks. Of this, 55 millions was for elementary instruction, seven millions for universities, about one and a half million each for technical and medical instruction. The superior church council receives 145,547 m.; the consistories, 1,127,343 m.; the evangelical clergy and churches, 1,456,124 m.; the bishoprics and their institutions, 1,255,417 m.; the Catholic churches and clergy, 1,247,314 m. Besides these sums the examining boards cost 96,302 m.; Cultus and instruction in common, 9,088,702 m.; art and science, 3,850,847 m.; special higher institutions, 5,478,473 m. The advance over the expenses of the preceding year (always conveniently given on the opposite page), was greatest in elementary instruction, where it had increased over 19 million marks. The other notable advances are for universities, the consistories, for Cultus and instruction, while technical instruction has fallen off.

The annual amount given by the State to the Prussian universities for 1890 was as follows: Königsberg, 777,908 m.; Berlin, 1,981,810 m.; Greifswald, 230,380 m.; Breslau, 812,591 m.: Halle, 616,107 m.; Kiel, 557,206 m.; Göttingen, 363,320 m.; Marburg, 555,037 m.; Bonn, 866,004 m.—in all, 6,760,363 m., besides special grants of nearly a million marks more. This by no means, of course, represents the total cost of the universities, for some of them own and administer extensive property of their own, and the income from student fees is considerable. Following the general exhibits are the salaries of each administrative officer, curator, councellor, judge, rector, treasurer, secretary, inspector, auditor, pedell, servants and watchmen, and then follow sheets presenting instructors' salaries by faculties. These are as follows, e. g. in Berlin, we are told, that in the theological faculty are eight ordinary professors, receiving between 4,500 m. and 10,200 m. each, amounting in all to 52,500 m. Thus it is impossible to identify the salaries of individual professors, and all secretaries and others having access to this information are bound by an imperial decree to secrecy. These things are not known even to the rector, but only by the minister and his agent, the curator. In the following tables the net income and outlay of each institute, seminary, etc., are given. Only the hospitals, clinics, agricultural institutes and chemical laboratories show any income, for lecture fees do not appear in this account. Then follow general tables of stipends and charitable funds, amounting in all the nine Prussian universities to 957,180 m. per year.

Gymnasia, real-schools and other intermediate schools are treated in five classes: 1. Those under local patronage and entirely without local aid, of which there are now but six. 2. Those controlled by the State, of which there are 192; perhaps half of these receive city, and all State aid, in addition to their own income. 3. Those controlled jointly by the State and by other boards or patrons, eight in number. 4. Those receiving city and occasionally State aid, but entirely self-controlled, of which there are 285. 5. Those with funds augmented by the State, four in number. The total cost of all these together is 29 million marks, of which five is from the State, over seven from the locality, 13 is earned, and nearly two is income from their own property. Twenty-two of these institutions have stipends devoted to special ends, yielding 179,173 marks per year. For elementary education Prussia supports 35 normal schools in as many districts at a total cost of 5,279,916 marks per year; 22 preparatory institutions at a cost of 477,330 m.; for training gymnastic teachers, 88,910 m. are expended; for supervision and inspection, 2,342,011 m.; salaries for elementary teachers, including a few special expenses, 46,572,008 m.

The art museums in Berlin cost per year 975,765 m.; the art industrial museum, 391,393 m.; national gallery, 81,910 m.; library in Berlin, 390,264 m.; Geodetic institute, 101,390 m.; Meteorological institute in Berlin, 107,200 m.; Astro-physic observatory near Potsdam, 70,000 m.; Berlin academy of sciences, 198,000 m.; Technological high school, Berlin-(Charlottenburg), 240,180 m.; that at Hanover, 159,410 m.; that at Aachen, 153,140 m. The medical-hygienic administration is also under the Cultus-ministry and costs 1,568,795 m. per year. This includes salaries of the 36 members of the provincial medical college, 35 assessors and 36 councillors, 531 city, district and county physicians, 324 district surgeons and many subordinate officers. Special extraordinary expenses have a section by themselves. Here can be seen what is doing for the year in the way of buildings and other permanent improvements. These for 1890 e. g. are 9,195,407 m. The budget of the Charité-Hospital is 1,268,536 m. The *etat* closes with a detailed presentation of the many Prussian stipends and fellowships, and of the Hannoverian fund, now amounting to 2,385,200 m.

Staats-Voranschlag IX ; pp. 335.

This is the Austrian *Etat* of the ministry of Cultus and instruction, and details the expenditure of a budget of 12,987,899 guldens. Of this sum four go to universities, five to intermediate, one and one half to lower schools, and about the same to industrial education. There are seven Austrian universities, counting the Bohemian and German institutions at Prague as one. In the order of expenditure they are as follows, e. g.: Vienna, Prague, Gratz, Krakau, Innsbruck, Lemberg, Czernowitz. Here salaries are given as follows: e. g.: Vienna, medical faculty, 25 ordinary professors at 4,500 florins, etc., down to six at 2,200 florins in 14 degrees. Thus a more perfect idea is given of the pay of each professor than in Prussia, but that of no individual professor can be identified. In the philosophical faculty, e. g., at Vienna, salaries range for full professors from 5,500 to 800 florins. For gymnasia and real-gymnasia (3,589,700 fl.), the 18 provinces are taken up successively in detail. Real schools spending 1,275,635 florins follow. Libraries, technical and industrial and finally elementary schools are presented with rather more detail than in the Prussian budget. This is especially true as to the sources of the income of the universities and the private rents and interests and student fees, which are not given in Prussia.

Geschäfts-Anweisung für die Universitäts-Kasse.

This important quarto pamphlet is drawn up for the University of Halle, but both its rules and forms apply with little change to other Prussian and indeed German universities. The different institutes with which separate accounts are to be kept are first defined, e. g., clinics, scholarships, etc. This entire financial administration is under the control of the curator, who represents the imperial government at each university. His assistants are a "rendant" or pay-master, controller and one or more book-keepers and servants. There are eight daily hours of service for each, and all are bound to absolute secrecy concerning all funds, salaries, interest and every other financial matter, and all are together responsible for any loss, unless it can be directly fixed exclusively upon one. Every item of income and expense is audited on the last day of each month, and there is an annual revision ending May 10. Detailed rules are given about false money, protection against theft, transporting and locking up money and security, the different books, and how to keep each, and blank forms are given for every bill, receipt, balance, entry, record, footing, in a way which explains the extraordinary caution and formality so rigorously insisted on at the Questor's office, which is the only point of contact for most Americans, with the elaborate financial system of university administration in Germany.

Dienst-Anweisung.

This consists of two parts, the first is a collection of rules for the management of university grounds, care and repairs of buildings, heating, cleaning, inspection, admission and discharge of patients at hospital and clinic, relations and duties of employees to the curator, professors, etc., fire-control, leave of absence, washing, inventories, book-keeping, for bed and towel wash, food for the sick, discipline, medical and burial fees for servants, relations to police, marketing, etc., etc. The second part is a bound collection of all the printed blank forms used in all administrative affairs covered by the above rules to illustrate them. This copy is issued by Von Shrader, the well-known author of the admirable *Gymnasial-pedagogik*, now curator at Halle, somewhat to the dissatisfaction of some of the professors that the head of a gymnasium should have been promoted for unusual executive ability to be the head of the university. The forms are nearly the same for all Prussian universities, and cover with especial fulness the medical clinics, the administration of which is far the most difficult. These rules were lately revised in connection with the complete and model re-building of the entire medical department at Halle.

VI.—University Buildings.

The New Sorbonne.

The competition for plans for this magnificent edifice was opened May 1, 1882, by the government, which bears half the expense, the city of Paris paying the rest. It now covers a space of 19,000 meters, or four times the space of the old *Sorbonne*. The principal occupants will be the Academy of Paris, the faculty of sciences, the faculty of letters, the faculty of theology, the library of the *Ecole des Hautes Etudes*, the Victor Cousin library. The church and present dimensions of the court must be preserved, and simplicity was enjoined. A series of prizes from 4,000 to 20,000 francs was offered for plans, six months time given, and of the jury of 20, six were named by the competitors and the other 14 by the minister of education and the city of Paris. Of 27 plans presented, those of Ballu, Formigé and Lheureux are depicted and described at length in *Le Genié Civil*, where the limitations of such competitions are also discussed, bitter complaint is made that the demands of architecture and the tendencies of the *Ecole des Beaux Arts*, and the political desire to make science architecturally impressive, so override convenience and scientific necessity. The education of architects must be far more directed to practical details, and the worship of Greek and other ancient styles of architecture must be less blind. Earlier architects had to strike the eye and were not tied to any very exact installation, and had few practical exigencies to meet. Cost over $3,000,000.

The New University Building at Glasgow.

This university, the oldest in Scotland except that of Saint Andrews (1411), was founded in 1450, and its new building, completed a few years ago, cost $2,100,000. It is rectangular and 180x90 meters, with two large courts, three and four stories high, and with a clock tower 83.5 meters high. Nearly all the laboratories, lecture rooms, museums, etc., of the institution are in it, including the library of 100,000 volumes.

The New University of Vienna.

The first sketch of this university was made by Ferstel in 1871 and it was erected 1873-83. Curiously enough the plan has much similarity with that of Duke Rudolph, its founder in 1375. A new building had long been needed, but not till the government could consent to build up the parade-ground could any location be found for it. The building is rectangular, 161x133 meters. It contains one great arcade court, 70x45 meters, and no less than eight smaller courts, an aula for 1,000 persons, a library for 500,000 books and 400 readers, 46 lecture rooms, and many residencies and laboratories. The architecture is generally in the Italian high renaissance style, and centers in the arcade, which was suggested by the Farnese Palace in Rome and the Theater of Marcellus. It cost nearly $4,000,000.

Technical High School at Berlin (Charlottenburg).

This building (1878-83), cost $2,300,000, is designed for 2,000 students, and was planned by Lucae and Stüve. Its dimensions are 224x65 meters, it has five courts and is built in high renaissance and hellenic style. A noble chemical building stands beside it, with another for testing building material near.

Buildings of the new Kaiser-Wilhelm University at Strassburg.

These are depicted in their elevations in a beautiful souvenir book, with text by Dr. A. Schricker, and with fifteen plates by I. Kraemer, while the scientific buildings are depicted with far fuller description and ground plans in the *Fest-Schrift*, of the 58th meeting of German naturalists and doctors, 1885, pp. 148. These buildings are on the whole the best and most expensive of all architectural embodiments of the German university ideals. They are separated by an interval of nearly a mile into two groups, one medical and the other for the other faculties. The first comprises separate buildings for physiology, anatomy, pathology, physiological chemistry, surgical clinic, psychiatric clinic, lying-in clinic, and a pharmacological institute. The cost of these buildings, with ground, was nearly a million and a quarter dollars. The other group contains a magnificent general building, buildings for chemistry, physics, botany, and two for astronomy. The cost of this group was nearly two million dollars, of which the German government gave half. As is usual in Germany, prizes were offered for plans for the central building, which was to cost nearly $600,000, and 101 plans were submitted, which conformed in the main to the specifications, which among other things required that business and lecture rooms should be on the lower floor, and aula and museums on the upper. So far as buildings go this is the model university of Germany, and although Kiel has been almost entirely rebuilt, so that but one of the buildings now in use existed 15 years ago, and Halle has a complete and admirable new group of medical buildings, and Breslau is now being rebuilt, Strassburg, although with but little more than 1,000 students, remains a most impressive monument and outpost of the conquest with which German culture hopes to complete the conquest of German arms. The old university (1567-1621), was reduced and split up in 1794 into isolated and feeble faculties. After Germany conquered the province these were abolished in 1872, and the builders were authorized to spare no reasonable expense. On the front of the central building in the niches between the columns are statues of the five ideal representatives of the five faculties—Paul, Solon, Hippokrates, Aristotle, Archimedes. On either hand and above the main entrance stand Germania and Argentina. Over the former are the words "The youth of Germany laying aside their arms and hastening to their studies," and over the latter the Platonic phrase "They have torches and pass them to one another." Above stands Pallas Athene with the torch of science, and the rewarding wreath-crown, and on either side natural science holding a crystal, and humanistic studies, and under both the inscription *Literis et patriae.* On the six side pavilion are 36 standing figures in white limestone as follows: the chief representatives of German science since humanism. Sturm, Kepler, Leibnitz, Luther, Kant, Gauss, Johannes Müller, Savigney, Melancthon, Zwingli, Calvin, Spener, Schleiermacher, Lessing, Eichhorn, Puffendorf, Schwarzenberg, Haller, Paracelsus, Baer, R. J. I. Jacobi, Guerike, Frauenhofer, Liebig, Copernicus, Werner, L. v. Buch, A. v. Humboldt, F. A. Wolf, Jacob Grimm, Bopp, Böckh, Niebuhr, Sleidan, Schopflin, Winklemann.

Note on Chemical Laboratories.

The first chemical laboratory in the modern sense was that of Liebig at Giessen in 1839 which was small and simple. Under this great master the science developed so fast and acquired such importance for medicine, technology, industry, agriculture, etc., that soon a series of more elaborate structures were erected as follows: Leipsic, 1843; Karlsruhe, 1850; Munich, 1852; Heidelburg, 1854-5; Breslau, Königsberg, Halle and Greifswald, 1861-2; Aachen, 1864-5. Under the influence of the Berlin chemist, Hoffman, who built the laboratory of Bonn, 1865, and that of Berlin, 1868, these structures became much more elaborate; e. g., the Munich Polytechnic, 1865-8; Pesth, 1868-72; Vienna, 1869-72; Strassbourg, 1872-3; Dresden Polytechnic, 1872-5; Gratz, 1874-9; Berlin Berg-Academy, 1876-8; Braunschweig, 1876-9; Berlin Agricultural, 1877-8; Kiel, 1877-9, etc. Since then the laboratories at Leipsic, Aachen, Munich, Strassbourg, Göttingen, have been rebuilt, and many new ones to be mentioned later have been constructed. Of late years no German laboratory has been built without a very careful study of all other leading German laboratories, at which their good and bad points were noted, and not only have several architects such as Kutlig, Kleinwächter, Tiede and others, but several professors of chemistry have made a specialty of this new form of architecture. A set of generally accepted principles have gradually been evolved, and while but few still say that simple equipments are best, lest students who go from these temples of science where all is provided, to those poorer, lose courage and think they can do nothing, the overwhelming consensus favors the very best ideal installation of the science, that the student's time may be shortened, his ideals held high, and one of the noblest, and considering its phenomenal recent development, one of the most interesting and useful of sciences, shall have a home worthy of its dignity and calculated to impress the community with a due sense of its value.

The cardinal principles for chemical laboratories is "much air, much light and much space." If the laboratory room especially is even a little dark the chief aim of the building is missed. For this reason one-sided illumination of a large working laboratory as at Heidelburg, Munich, Griefswald and elsewhere is lately entirely discarded. For digestoria e. g. and much else, top lights may help but are not the best and have not of late been the rule. They permit fine color discriminations in fluids in opaque dishes seen from above, but are inconvenient for transparent test tubes. They free much wall space for hoods, evaporators, etc., but zenith light is often either too bright or too dark. It must be admitted, however, that in such laboratories as Roscoe's at Owens College, that of University College, London, the Agricultural High School, Berlin, the Johns Hopkins general laboratory, etc., very fair results have been accomplished by only one-sided light, eked out by over light or otherwise. The rule there is more light from two and, if possible, opposite sides, like those of the laboratories at Clark University.

In considering the general ground plan, three classes of rooms must be considered: work-rooms and their annexes, lecture rooms and preparation rooms, and dwellings for janitors and perhaps helpers. Museum rooms, which first came in the new Strassburg laboratory on any extended scale might perhaps be classed as a fourth group. The work-rooms are most important as well as largest. There must be three large laboratories, which may be end to end, as in the very long laboratory at Strassburg. If the building is solid and without courts these must be in different stories. These work-rooms are usually on the first floor and auditorium, collection, and all rooms for isolated purposes on the floors above unless, as in Berlin, lack of light drives laboratories to the top floor. The abundant corridors and great distances in the large one-story, four-courted laboratory of Bonn are not commended. Chemistry grows so rapidly and in such unexpected ways that it is unusually necessary that these laboratories should have ample space for growth. Resident service is indispensable, as not only is there unusual danger from fire but there are often experiments that need care by night, but there must be exceptionally good ventilation to carry off noxious gases and residence must be isolated. The arrangements at Leipsic, Marburg, Kiel, Dresden, and elsewhere where residence is over or directly connected with the work rooms, are particularly bad. Most have a large and a small auditorium. The former is the middle point of all and is usually not far from the main entrance. Near the students' entrance are closets and wardrobes; the latter have been lately mostly discontinued and overcoats, hats and umbrellas are taken into the lecture rooms, because thefts have become so common. Gas, water, sunlight from a heliostat must be brought directly onto the lecture table. Back of the lecture room must be a waiting room for instructors, with closets, preparation room, collection rooms, etc., In some places, (e. g. Aachen) is a special dark room for preparations that cannot be exposed to light. The great lecture room is usually square, and hearing is as important as seeing well. The number of square meters per pupil or seat varies from .7 in Budapest to 1.16 in Braunschweig. The seats of the hearers are amphitheatre-wise, so that each can look at the table over the head of the one before him. Over and side lights may be combined, but the latter are better. Some have great window surfaces that can be suddenly opened in case experiments miscarry, to let out bad odors. The room must be so arranged as to be suddenly darkened. For some places, e. g. Gratz, the middle table moves on rollers to and from the preparation room. Departing from Liebig's idea in the Munich Academy of Sciences, where the space back of the demonstration table is converted into a chemical workshop visible to students through an opened wall, Landolt has made the auditorium of Gratz and Aachen into a sort of theater with demarcations by pillars, narrowing walls, elevations and changeable background. The writer of the present article has seen several lecture rooms in which large frames were raised as the back-scenes of a theater-stage are, to be covered with new illustrative charts by an assistant in a chart room above and lowered again during the lecture. In Gratz the proscenium is square and about as deep as the lecture room, and elsewhere covered passages both above and below the scene are arranged for servants unobserved to make changes during lectures, and in Gratz, Bonn and Aachen a workshop is adjacent to the demonstrator's space in the lecture room.

Working rooms offer most difficulty for architects, and here builder and professor always have most difficulty in harmonizing their ends. There is now general agreement that there must be room for beginners distant from those for advanced students. Some distinguish between qualitative and quantitative work, or have a separate set of rooms for organic chemistry. All advanced and larger institutions provide larger rooms for advanced and special students. In the Münich Academy organic is separated from inorganic chemistry and each has laboratories. Commonly now there are two rooms for analytic chemistry, a qualitative and a quantitative, and each must have access to a sulphuretted-hydrogen room. The quantitative room must be joined to a balance room, a gas analysis room with divider, a spectral analysis room in which optical experiments can be made, and a combustion room. A special room for experiments on a large scale is needed. The synthetic division needs a work-room for advanced students; with this must be connected a weighing room and a room for extensive apparatus, a stink room, an explosion room, a room for exiccators, air-pump, crystalization, etc., a room for gas analysis, a fire-room with furnace (which must be in the basement), a physical (and optical) room, and a library for common use with writing room, and, if possible, a room for judicial chemistry, an ice room for operations requiring a low temperature, a distillation room, a room for rough work and the preparation of reagents, and a special store room for strong acids and combustibles, one for glass, porcelain and other supplies kept in quantity, and a sale room are all needed in a perfect modern laboratory. Sarrazin and Eggert have compiled with great labor and care rules for the size and equipment of each of the above, and size and form of working desk and hoods. In Budapesth, a high lecture table is erected at one end of the laboratory where the instructor shows beginners how to overcome the difficulties that often cause them to lose much time with obstacles thus easily overcome. In several recent treatises the peculiar problems of gas, water, heating, ventilation, special draughts, drainage, stone pillars beside the lecture table, projective apparatus, etc., are treated with great detail.

The literature on this subject is already quite voluminous. Over 70 articles are before us. On most of the larger laboratories built within the last 25 years special descriptive monographs, often works of art themselves, have been printed, a few of which are sampled below. Besides these the government in Germany prints colored plans on large heavy sheets, several score of which have been collected by the PEDAGOGICAL SEMINARY. A distinguished professor of chemistry in Prussia lately advised that chemical buildings be made more or less temporary, adding the extravagant remark that they would need to be totally reconstructed every 10 years if the progress of the science was as great in the future as it had been in the past few decades. For finer details we refer our readers to the files of the *Bau Zeitung*, *Zeitschrift für Baukunde*, *Zeitschrift f. Bauwesen*, *Centralblatt f. der Bauverwaltung*, *Genie Civil*, *Carpenter and Builder*, *etc.*

Wie sollen die Unterrichtsräume einer chirurgischen Klinik in Wien beschaffen sein. TH. BILROTH. pp. 33—1889.

First the operation room should be large enough to seat at least 300. The "arena" must be especially large; for tradition and law require two military surgeons, five foreign physicians, two assistants, eight apprentices, two patients, one whose wounds are being dressed while one is operated on, in all 27 persons. The best light is not pure over light but chiefly through a large window over against the operating table with the circular tiers of seats cut away to it, dividing thus the amphitheater into two halves. Pure over light is apt to be darkened by sudden snow, and the entire utility of surgical clinics for students depends on the amount of light. Large classes are an evil to be made as tolerable as possible "small universities are ideal institutions for science, both for teaching and investigating." Now students who get bad seats soon stop attending and this absenteeism is contagious. Amputated members, tumors, etc., should be shown; as should such microscopic sections of them, as can be hastily made, to students in line on leaving the room and not passed about in presence of the patient. This requires good halls. There must be a small and accessible pathological museum (quite distinct from the large pathological museum). The sick room and the waiting rooms must both be isolated from the operation room, but the ordination room must yet be so directly connected that all that goes on in it can be controlled by the professor. Out of door patients from ambulatories are very necessary for the young physician to show him milder cases which will constitute the greater part of his practice. Formerly stationery clinics in hospitals were regarded as unscientific. Now many would drop out of door cases which bring so much dirt and disorder. The vigorous young docents have taken these cases, and made poliklinics and special courses from them where throat, chest, skin, eye, ears, nerve, female and other diseases as well as gynaecological cases receive special treatment. These divert much attention and attendance from the general clinics, but yet Dr. Bilroth rather unwillingly advises that special small rooms be given these vigorous young docent rivals, rather than they disturb the wards of the hospital by holding their courses there as they now do. Of the 2000 beds of the Vienna hospital 687 are now clinical. This number should be increased to 1200. This means in Austria transferring 513 beds from the supervision of the minister of the interior to the minister of education. The higher the houses the worse is the air of the street and lower floor, so hospitals must be low, if possible but two stories high. This involves difficulties but these are only stimuli for energetic men to solve them. Till very lately it was thought that contagion was by gases and that plenty of fresh air was the best preventative. Now it is known that contagion is due to germs and that only disinfection methods prevent contagion. Thus the extensive and expensive pavilion system (as e. g., in the new Hospitals of Bourges, Montpelliers, Bleydam, Heidelberg, Buenos-Ayres, Baltimore, Hamburg and Berlin) is far less necessary than it lately seemed. Plans of the desiderated operation-theater and its annexes by the expert hospital architect Gruber are appended.

Die Neuen Universitäts-Augenheil-Anstalten in Deutschland. Leipsic 1888. pp. 104.

Professor Zehender of Rostock has here collected the plans and cost, and discussions of the eight ophthalmological buildings erected at German Universities during the last 12 years. These are Freiberg, opened 1876, Breslau 1876, Königsberg 1877, Heidelberg 1878, Leipsic 1883, Halle 1885, Marburg 1885, Greifswald 1887. The work is copiously illustrated. German unity has so approximated all her universities that with every new departure at one the experience of all others is carefully studied. University hospitals of all sorts are distinguished from all others because the patients are utilized for purposes of clinical instruction. Not only teaching but research must be aimed at so that there must be not only rooms for instruction but for research. No clinic can dispense with rooms for experiments on animals. Experiments must be made on animals before they are made on men. It is in clinical institutions, let it plainly be said, that the first new experiment on men must be made. If it succeeds, these patients, who pay nothing but have the best possible done for them, profit by it, and theirs is the danger that it may kill. This is the more proper, as treatment in Germany is at State expense and not provided for by donations of philanthropic persons. Pay-patients should have a room, but few other special privileges. The system of giving them luxuries at high cost to make money is denounced. The hospital ideal is to give each patient his own room, indeed his own house. Smaller and more numerous buildings, the greatest isolation without sacrificing the advantages of unity and collectivity is now the cry. The separation of surgical cases from internal diseases was the first. There are now three systems, viz: corridor, pavilion, and barrack. The first is best for ophthalmological patients and is that of all eight of the new buildings. Barracks ventilate best, and are best for most surgical diseases, while pavilions are best for inner diseases. Eye-patients are usually otherwise well and one chief aim of the hospital building and regimes should be to keep them so. This hygienic location, while always desirable, is less so than for more serious ailments. Such institutions should be located in the center of greatest poverty, and the rooms of the patients should open northward. Each should contain 4 to 6 persons so grouped as to help each other most. The corridor serves not only to communicate between rooms but for the walks and day room of patients, and must never be in the middle but on one side of the building. The operating room must be well lighted but small, for but few can see operations on so small an organ as the eye. Sometimes electric light is used. The dark room for ophthalmoscopic investigations need be but small. Private rooms for pay patients are described, and the garden must be kept clear of all shrubs that prevent easy observation of all patients, but sheltered from wind. The present tendency favors a rather severe separation of sexes. The book closes with descriptions, cost, personel, etc., of each of the eight institutions prepared by its director. It is interesting to remember that the work of von Graefe who created ophthalmology as a department of medicine was done in three ill-adapted dwelling houses.

THE HIGHER PEDAGOGICAL SEMINARIES IN GERMANY.

WM. H. BURNHAM, PH. D.

Pädagogische Seminarien für das höhere Lehramt. Geschichte und Erfahrung. Von DR. HERMANN SCHILLER Leipzig, O. R. REISLAND, 1890, pp. 171.

Die Pädagogische Vorbildung zum höheren Lehramt in Preussen und Sachsen. Ein Reisebericht von P. VOSS Halle a. S., 1889, pp. 171

Aus dem Pädagogischen Universitäts-Seminar zu Jena. 1–3 Hefte. Herausgegeben von Prof. Dr. W. REIN. LANGENSALZA, Hermann Beyer & Söhne, 1888, 1890, 1891.

Die Nothwendigkeit Pädagogischer Seminare auf der Universität und ihre zweckmässige Einrichtung. Von DR. HEINRICH GUSTAV BRZOSKA. Neu herausgegeben von Dr. Wilhelm Rein. Leipzig, 1887.

Das Seminarium Praeceptorum an den Franckeschen Stiftungen zu Halle. Ein Beitrag zur Lösung der Lehrerbildungs-Frage. O. FRICK. Halle a. S., 1883.

Sammlung Pädagogischer Abhandlungen. Herausgegeben von Dr. O. FRICK and H. MEIER. Von Prof. Dr. FR. ZANGE. Halle a. S., 1890, pp. 76.

Sammlung der Verordnungen und Gesetze fur die höheren Schulen in Preussen. Dr. L. WIESE. Dritte Ausgabe, bearbeitet und bis zum Jahre 1887 fortgeführt von Prof. Dr. Otto Kübler. Berlin, 1888.

Lehrproben und Lehrgänge aus der Praxis der Gymnasien und Realschulen. Herausgegeben von Dr. O. FRICK und H. MEIER. Heft 23, pp. 111-121. Heft 24, pp. 135-140. Halle, 1890.

I.

HISTORICAL.

There have been two kinds of higher pedagogical seminaries in Germany: 1. Seminaries after the period of university life. 2. Seminaries in connection with the university.

1. *Seminaries after the Period of University Study.* The beginnings of pedagogical training are found in the Middle Ages. Mere learning was not deemed sufficient for a teacher. Every

new *magister* was required to teach two years in the university city or in the neighboring region, more or less under the eye of his master. Later, at the time of the Reformation, this wholesome idea lost its force; and the notion seems to have prevailed that to be a student of theology or a Master of Arts fitted one to be a teacher.

A saner view was emphasized by Ratich and Comenius. To the former belongs the honor of opening at Köthen, under the patronage of Prince Ludwig, the first pedagogical seminary. He gave free lectures upon didactics to teachers and others, conducted discussions upon educational questions, and gave model lessons according to the methods that he had invented. After a time he permitted some of his pupils to give the model lessons. Although Ratich's model school was short-lived, this pedagogical seminary combined theory and practice after the fashion of the best modern institutions. Comenius also, maintained that teachers should understand the art of teaching; and his *Didactica Magna* is an important contribution to their theoretic education.

Francke followed Ratich in maintaining the necessity of practical preparation for the teachers calling, and in 1707 he established at Halle the *Seminarium Selectum Præceptorum.* At first there were 10 students; gradually the number increased, until in 1755 there were 48. The members bound themselves for five years. The first two years were devoted especially to acquiring knowledge. During the last three the students were employed in the royal Pädagogium and in the Latin *Hauptschulen.* Material aid was granted the members by allowing them to sit at the Orphan House table, by the loan of stipends, and the like. The philanthropists likewise emphasized the necessity of higher instruction for teachers; and a result of the interest they aroused was the seminary established by Gedike in Berlin. An excellent teacher, an organizer, a writer of note, and a reformer, Gedike deserves particular notice, especially since his seminary became the model for all similar training-schools that were established later. A yearly sum of 1,000 thalers was appropriated for this seminary by the government, and Gedike, who was *Oberschulrath,* was entrusted with the task of drawing up a plan for work. His aim was to furnish skilled teachers for the *Gymnasia* and the Latin schools; and he presented in substance the following report to the King: The candidates should listen to the instructions of skilled teachers, study the best educational literature, prepare written works upon pedagogical problems, and finally, give instruction themselves, under the supervision of the director of the seminary according to instructions prepared by him. Besides the director, three of the other teachers of the *Friedrich-Werder'schen Gymnasium*, who had sufficient talent and experience, should be present at the lessons given by members of the seminary, and show by their own example the errors to be avoided and the devices of method to be approved. As a rule, only those should be admitted to the seminary who had completed their university studies. (Gedike wished to admit others occasionally, but the King did not approve this). The seminary library should consist of the best pedagogical literature, and also a definite sum should be expended yearly for instruments, specimens, natural products and the like. Proper use of the latter in instruction should be shown to the members of the seminary by skilled teachers. Gedike provided for a special teacher of drawing, who should instruct members of the *Gymnasium* destined to be teachers in the smaller schools. He asked pay for the teachers who took part in the seminary, but he himself received no remuneration.

This plan, with some unessential changes, was approved by the King, and in 1788 the seminary was organized. The members of the seminary were on duty ten hours (per week), in the different classes of the *Gymnasium*. The lessons were changed semi-annually; the candidates had charge of the writing and drawing lessons; they were obliged to take the places of teachers who were ill, assist other teachers occasionally in correcting written exercises, help the director at the quarterly and semi-annual examinations, visit the classes of the director and the other teachers, and make friendly criticism of any defects noticed. All were obliged semi-annually to prepare a pedagogical dissertation upon some subject chosen by themselves, the material for which should be taken as much as possible from their own observations. These papers were read at the monthly meetings of the "pedagogical society," in the presence of the director and other teachers of the *Gymnasium*, and criticized by those present, and, finally, by the director. After the meeting, these dissertations were passed around among the members, and they had to give a written criticism, which was read at the next sitting. (For lack of time this method was soon abandoned.) The dissertations, judging from the subjects known, were partly upon methods, partly didactic, partly reports upon different schools. There were also discussions upon pedagogical literature, examinations, organization of other schools, and the like. In the practical work of the student-teachers, Gedike emphasized two things: That teachers should have practice in all grades; and that they should have training in the moral and pedagogical discipline of individuals. He condemned the class-system where "every class has its own teacher, and every teacher his own class, in which he is one and all, and which he instructs in everything that he knows and that he does not know, so that every class, so to speak, is a school by itself." It discouraged the teachers in the lower grades, and rendered those in the higher, arrogant and pedantic, and made it more and more difficult to obtain excellent teachers for the elementary grades. To give the candidates practice in discipline, disorderly, careless and lazy pupils were given them from time to time, whom they had especially to observe, and, if possible, improve. This was to be made an exercise in pedagogical pathology and therapeutics, and the teachers were especially recommended to work over their observations of pupils into an *historia morbi*. Such exercises in individual pedagogy made their discussions fruitful, and Gedike remarks that by this method many an incorrigible pupil was remarkably improved.

In 1793 Gedike added a "*philologische societät*," consisting only of members of the seminary, who met monthly and prepared Latin essays upon classical and humanistic subjects. This introduced a foreign element into the seminary; and, after the death of Gedike, its strictly pedagogical character was lost. In the words of Paulsen, the pedagogical enthusiasm of the eighteenth century was extinguished by the classical enthusiasm of the nineteenth.

The successor of Gedike was Bellerman, whose self-sacrificing activity kept the seminary alive during the evil days of the war of 1806. With modified plans, its work was continued by his followers, but its double character (pedagogical and classical), was maintained; and it now has a continued history of more than a hundred years. This seminary is at present connected with the Köllnische Gymnasium in Berlin, and Dr. Kern, the noted grammarian, is its director. Other pedagogical seminaries, modeled after the principles of Gedike, were established at Breslau, Stettin and Königsberg.

2. *University Seminaries.* According to Prof. Rein the honor of establishing the first pedagogical seminary in connection with a university belongs to Erhard Weigel, professor of mathematics in the University of Jena, who opened a sort of experiment school at Jena in 1684. Another university seminary was founded by J. M. Gesner, at Göttingen, in 1737. It was a philological-pedagogical seminary with the special aim of preparing students of theology to be teachers. The work consisted of instruction in mathematics, science, history, geography, etc., as well as in pedagogics. Also some practical experiments in giving instruction were made in the Göttingen city-schools. The candidates did not need, how-

ever, to go very deeply into the sciences, since they intended to become preachers in a few years. In 1777 a pedagogical seminary was organized at the University of Halle. This, beginning life as daughter of the theological Seminary, had a somewhat checkered history under the Philanthropist Trapp, under Friedrich August Wolf, and others until, in 1884, in was removed to Magdeburg.

A "Philological-pedagogical Institute" was opened at the University of Helmstädt by Wiedeburg in 1779. The number of actual members was ten; but listeners were admitted. The members were required to attend lectures in the University upon the Theory of Education, Physiology, Anatomy, Philosophy, Psychology, Practical Theology, Mathematics, Natural History, Technology, Political and Church History, and Ancient and Modern Languages. Special attention must be given to the history of Literature, Fine Arts, and the Sciences. An encyclopaedic knowledge of all other sciences was required; and the study of Theology was recommended. The classics were studied in their entire scope. Latin and German essays were read and criticized. The best papers were printed. In addition to this encyclopaedic course of study practical work in teaching was required. The director conducted a Paedagogium, in which four of the members were regular teachers, and the others, after six months' membership in the Seminary, taught as many hours as they had time for without interfering with their other work. The director visited the different classes, and afterwards gave personal criticisms to the teachers. In the Seminary the members discussed what had been learned in the Paedagogium, the character and progress of the pupils, methods, and the like. Special attention was given to written notes made by each teacher and reported monthly.

In 1807 a somewhat similar pedagogical Seminary was opened at the University of Heidelburg by F. H. C. Schwarz. The course required four semesters, and was devoted to the theory, practice, and history of education; and this work was supplemented by practice in teaching and by visiting educational institutions and reporting observations.

Still more interesting is the history of the seminary opened a few years later at Königsberg by Herbart. In 1810 the Prussian government granted a yearly appropriation of 200 *thaler* for a "didactic institute," in order to give Herbart an opportunity to make a practical test of his pedagogical system. The peculiar characteristics of Herbart's plan were the importance given to the family-idea in his practice-school and the emphasis placed upon the inseparable connection between philosophical theory and practice. After 1812 the school was held at his own house. The institution was fairly successful; but was given up when Herbart left Königsberg in 1833. Other university seminaries were established at Kiel, Göttingen, Jena, and Leipzig.

The one at Jena grew out of a pedagogical society founded by Dr. Stoy while he was *Privat-docent*. The members of this society discussed methods of instruction, and practiced what they learned upon a number of boys who came of their own accord from the *Bürgerschule*. The seminary that developed out of this was Herbartian in character. The members gave instruction in the Seminary-school, listened to Stoy's lectures, attended the model lessons he gave, worked out their plans of instruction, and kept a record of their teaching. A minor point is interesting. Each member upon entering the Seminary wrote an autobiography giving an account of his own educational development.

About the year 1857 the meetings of the Seminary were divided into the *Praktikum*, the *Kritikum*, the *Scholastikum*, and the *Pädogogikum*. The *Praktikum* was a carefully prepared test-lesson; the *Kritikum* was for criticisms; the *Scholastikum* was for the consideration of specific school matters; and the *Pädagogikum* for pedagogical questions of a general character but related to the school. Owing to differences between the University and the Government there is a gap in the history of the Seminary between 1866 and 1874. But in the latter year it was re-opened and continued its former activity until Stoy's death in 1885, when Prof. Rein became its director.

Another famous Herbartian seminary was organized by Ziller in Leipzig in 1861. This also was a private foundation. It was formed after the model of the Jena seminary. It had its *Theoretikum* for consideration of methods, history of education, pedagogical systems, and for preparation for the *Praktikum*. Every member of the seminary must give test-lessons in the *Praktikum*. The Director appointed a critic for each lesson, who must give an oral or written criticism at the Conference. Besides discussion of the Praktikum, school matters in general were considered in the Conference. Here, as in Jena, great importance was placed upon reports of observations, class books, and the like. Both shaped their methods upon Herbartian principles. In both there were many theologians and teachers from the *Volksschulen*. The *Verein für wissenschaftliche Pädagogik*, which became the center of the Herbartian School of Pedagogy, originated in Ziller's seminary.

II.

THE PRESENT CONDITION OF THE HIGHER PEDAGOGICAL SEMINARIES.

Instead of using the classification employed above, the higher pedagogical seminaries in Germany at the present time may conveniently be divided into four classes: 1. *University Seminaries without Practice Schools.* Their work is confined to theoretical discussions of important educational questions. The occasional practical work with a class of borrowed pupils is merely illustrative. 2. *University Seminaries with Practice Schools.* These give practice in discipline and instruction, and furnish the advantages of an excellent model, keen criticism, and the rivalry of zealous fellow students. 3. *School Seminaries.* These seminaries are under the guidance of the directors of prominent schools. They cannot, as a rule, give the entire theoretic preparation in pedagogics, but they pre-suppose a good share of such preparation, and give a practical introduction to school organization and school work. 4. *Seminaries under the Direction of Members of the Provincial School College.*

1. *University Seminaries without Practice Schools.* The noted seminaries at the University of Leipzig are examples of this class. At the time Voss visited the University in 1887 there were three pedagogical seminaries in activity—the Royal Pedagogical Seminary conducted by Professors Masius and Richter, the Scientific Pedagogical Praktikum by Professor Strümpell, and a seminary conducted by Professor Hofmann.

As the Royal Pedagogical Seminary is connected with the University the members are busy with their university studies and have not much time for visiting different schools and the like. In order to give some practical work Prof. Masius has been wont to borrow a half dozen pupils from a *Realgymnasium* as subjects for his seminary. This method is deemed rather a poor substitute for a practice-school, and one writer has called such practical work "comedy play." Prof. Richter has his men take a class in the *Gymnasium* and repeat a lesson that the pupils have once had. As an illustration of the theoretic work done by the members, a few subjects for papers given out by Professor Masius are interesting. "The Pedagogical Import of Play," "The Most Important School Laws in the 16th Century," "Herbart as an Educator," "The Characteristics of the *Orbis Pictus* by Comenius,"—are samples.

Prof. Strümpell's seminary has no practical work connected with it; but the members for the most part, are picked men from the *Volksschulen*. Much attention is given to psychological pedagogy; and much of the work consists in preparing papers upon educational subjects. These are carefully criticized by the director and revised by the writer, often many times. Prof. Strümpell says that he has had members bring him the same papers ten different times. Some of these have been published in the series, *Pädagogische Abhandlungen von Mitgliedern des Wissenschaftlich-pädagogischen Praktikums an der Universität Leipzig*. The titles of some of the recent issues are "*Psychologische Kindergartenpädagogik;*" "*Welcher Unterschied besteht zwischen logischen und ästhetischen Urteilen?*" "*Die Phantasie im Dienste des Unterrichts;*" "*Die willkürliche Aufmerksamkeit;*" "*Die Erweckung und Pflege des Ehrgefühls;*" "*Die rechte Erziehung ist immer zugleich Selbst-erziehung und Selbst-bildung des Erziehers.*"

Most of the members of Prof. Hofmann's seminary are theological students; hence, the instruction is adapted to their future needs as inspectors and teachers of religion in the schools. Some features of Prof. Hofmann's seminary deserve special mention. In the practice-work the student is made to feel that he takes the place of the actual teacher. He gives his lessons before a regular class in the school, choosing his own theme, but adapting it to the programme of the class, so that it forms a link in the regular instruction. The student must prepare his subject beforehand and give an oral account to Prof. Hofmann of the plan and contents of the lesson. After this test lesson the work is criticised by Prof. Hofmann and by another member of the seminary; and, finally, in a parallel class, the candidate repeats this lesson. Prof. Hofmann says that the repeated lesson is not to be compared with the first, and that the candidate learns more from this repetition than from ten ordinary lessons, since he sees in this way the difference between slipshod instruction and a lesson well prepared and thoroughly taught. In Prof. Hofmann's opinion the pedagogical seminary should be immediately connected with the university, and its work should come in the regular period of study, since only in a university are all the necessary forces and means happily united. To the objection that university professors are good in theory but poor in practice, he answers that it would be a shame if in the whole of Germany there were not men enough who unite both qualities.

2. *University Seminaries with Practice Schools.* The most famous seminary of this class is Prof. Rein's pedagogical *Universitäts-Seminar* at Jena. After Stoy's death in 1885 Prof. Rein was appointed director, and in October, 1886, the seminary was re-opened. According to the new statute, the

aim of the seminary should be two-fold—the promotion of pedagogical science, and the practical training of teachers for the higher schools. The union of theory and practice is its watchword. It is founded upon the principles of the Herbart-Ziller-Stoy pedagogy. While no blind allegiance is given to the words of the master, the work of the seminary, in Prof. Rien's phrase, is pregnant with Herbartian ideas. The members who teach in the practice-school prepare their lessons according to the formal stages (*Formalstufen*), of Herbart. The principle of *concentration* is insisted upon, and great attention is given to the Herbartian literature. The seminary is a kind of "school-church," with a definite creed and definite rules, although allowing freedom and independence to individual members. On this foundation, in connection with the Herbartian church the world over, it seeks to build up pedagogical science. While the director maintains that knowledge is the *conditio sine qua non* of giving instruction, and while he cites with approval Goethe's scorn of the teacher who gives out one day the thin dilution that he has composed with the sweat of his brow the night before, he vigorously combats the widespread error that mere knowledge of a subject is enough for an instructor. The imparting of knowledge is more difficult than its acquisition. Even in Germany, in Prof. Rein's opinion, examination is a master rather than a servant, and there are many teachers and but few educators. The aim of the seminary at Jena is to form the latter, not to make school-keepers but school-artists.

The course consists of lectures, theoretical study, and teaching in the practice-school. The members are of two kinds—*ordinary*, or those who teach two hours or more each week; and *extraordinary*, or those who are excused from this work. The lectures are in pedagogy, ethics and psychology. Theoretical preparation in these studies is deemed necessary for all, and all are required to attend the weekly meetings of the seminary. The meetings of the seminary are of three kinds: (a) The *Theoreticum*; (b) the *Praktikum*; (c) the *Kritikum*, or *Konferenz*, each once a week. (a) In the *Theoretikum*, papers upon educational and psychological subjects are presented by the members, books are reviewed, reports are made upon the work of prominent educators, and the questions of the day are considered. The director presides, and all members of the seminary may take part in the discussion. (b) The *Praktikum* consists of a test-lesson, given in the presence of the director and of all the members of the seminary, by one of the candidates, or sometimes by one of the head-teachers (*Oberlehrer*). For each *Praktikum* a critic is appointed by the teacher in charge to make a written report of the lesson before the meeting of the conference. (c) The *Konferenz* is conducted by the director or by one of the head-teachers. School matters in general, the allotment of tasks, announcement and discussion of the subject to be taught in the classes during the coming week (*Wochenziele*), and the like, occupy the first part of the session. The most important part of the conference, however, is the discussion of the test-lesson. This is opened by the student who gave the lesson. He presents a written criticism of his own work. Then the appointed critic gives his report, also in writing. The subject is then open for general discussion; and, finally, the director gives a *résumé* of the results of the discussion, and passes judgment upon the lesson.

In the work of the practice-school Prof. Rein is assisted by three head-teachers (*Oberlehrer*). These teachers have general oversight of instruction. They take care of the class-rooms, keep the class-books, and have charge of the programs (*Konzentrationtabelle*). They make weekly reports in the conference upon the condition of their classes, examine the note-books of the pupils, and visit each other's classes as much as possible. Moreover, they visit the parents of the pupils, they have special oversight of the instruction given by the practice teachers, they take charge of the property of the school, and are its librarians and historians.

The practice-school consists of three classes, two *Volksschulklassen* and one *Gymnasium* class (*Quarta* at the time of the last report). The school session begins at seven o'clock in the morning, in summer, and at eight o'clock in the winter. There are recesses of fifteen minutes at the beginning of each hour. In warm weather school work is omitted in the afternoon, or the instruction is given in the open air, and walks and excursions are frequently made. School festivals occur on the Emperor's birthday, the anniversary of the Battle of Sedan, at Christmas, and in May. Also the yearly school examinations and the like have something of the character of school festivals. The last report contains a detailed account of a summer excursion of the pupils to the Harz mountains under the direction of *Oberlehrer* Reich.

Very careful rules for all the details of school work and discipline are prescribed. Punishments are employed as a means of reformation, and are of two kinds; punishment for *governing* and punishment for *discipline*. The aim of the former is to restore order, when the instruction is disturbed; the aim of the latter to develop character. The means of *governing* are as follows: Rapping on the table, a warning appeal to the class, censure or threatening without mentioning names, making pupils stand in the rear of the room, and the like. The *discipline* is intended to appeal to the sensibilities of the pupils, and consists of conversations, incentives to praiseworthy activity in the form of thanks, sympathy, and the like. In case of misdemeanors, the punishment is to correspond to the fault, and may be increased to corporal punishment, but only the head-teachers are allowed to administer the latter. The chief rule for all punishments is that they must be consistently employed; and they must be administered with moral earnestness and entirely without passion. Finally, they must make the pupils recognize their faults, and make those punished, and also their fellow pupils, conscious of the justice of the punishment.

Prof. Rein's seminary has been well attended from the start. According to the second report by *Oberlehrer* Reich, in the year 1888-89 there were 37 members, including the head-teachers, of which 14 were foreigners. The membership had somewhat fallen off in 1889-90; but in the summer semester of 1890 there were 32 members, including the head-teachers, of which 11 were foreigners. At a recent visit the reviewer found several Americans among Prof. Rein's students. Among the other foreign countries represented are Bulgaria, Austria, Switzerland, Greece and France.

3. *School Seminaries* conducted by the director of the given school. There are two famous seminaries of this kind, one connected with the *Franckesche Stiftungen* at Halle, the other at Giessen. Dr. Frick, the director at Halle, re-established in 1881 the *Seminarium Præceptorum* first opened for the training of teachers by Francke. Larger sums are appropriated here than in other Prussian schools for the salaries of teachers during their trial-year. There are means of earning money as teachers in the orphan asylum, as librarians, and the like. Some have a free home given them. And the numerous schools of the foundation afford ample opportunity for visiting different classes and for practice-teaching. The work, as in other seminaries of this kind, is both theoretical and practical.

In the theoretical work the candidates are instructed in general didactics by the director; in methods, by the director with the aid of the rector of the Latin School, the director of the *Real-gymnasium*, and other teachers from these schools (*Seminar-lehrer.*) Several small pedagogical dissertations are required of the members, but no special scientific works. Systematic lectures upon pedagogics, the history of education, and upon pedagogical psychology are deemed parts of the university work, and are omitted. Essays, reports, and the like; are not required to any great extent; but systematic written preparation for definite lessons is frequently demanded. The effort is made also to acquaint the students with pedagogical literature. The official regulations in regard to the duties of teachers, school organization, and the like, the most important works upon pedagogical principles; the "Library of Pedagogical Classics;" the works of Raumer, Roth, Lübker, Schrader, Schwarz, et al.; the literature on each special subject; the most important works of the Herbart-Ziller-Stoy school; works like Kehr's *Geschichte der Methodik;* Willmann's *Pädagogische Vorträge* and *Didaktik;* Kern's *Grundriss der Pädagogik*, and the *Jahrbücher für Wissenschaftliche Pädagogik*,—are all used. Moreover, the students are stimulated to observe by being required to give critical reports of what they see in test-lessons or in the regular hours of instruction. Dr. Frick supplements this by reporting his own observations in the schools of the *Franckesche Stiftungen* and in other institutions. The students are instructed in the fundamental principles of the Herbartian pedagogy, with an attempt to enlighten its darkness and broaden the limits of its formalism.

The practical instruction is of three kinds: (a) The candidates become acquainted with well organized courses of instruction by visiting regularly the classes of the *Seminar-lehrer* and other excellent teachers; at first, in those subjects in which the candidate himself gives instruction, then, in the related and next succeeding subjects, finally, in the more remote. (b) The candidates hear model lessons given by the *Seminar-lehrer* in their own classes and in those of the other teachers of the two institutions. (c) The candidates themselves give instruction; at first, in the classes and lessons allotted to them, then, in other classes and lessons of the same institution.

Special emphasis is placed upon the practice-teaching. The candidates make most careful written preparation, or, at least, a written outline of their test-lessons, endeavoring to apply the fruitful thoughts of the Herbart-Ziller-Stoy school. Immediately after the hour, or in the next Conference, the lesson is criticised by the *Seminar-lehrer*. The detail of this criticism as well as the perhaps undue tendency to schematization may be seen from the following list of points considered:

I. *Choice and Arrangement of Material.* 1. Was the amount of material in right proportion to the allotted time? 2. Was the material duly sifted, properly divided, and appropriately united? 3. Was the plan of the lesson (the *Disposition*) clear?

II. *Manner of Treatment.* 1. Did the teaching follow a systematic and appropriate order (*i. e., the Formalstufen.*) 2. Was the lesson clearly presented, logically developed, firmly impressed upon the minds of the pupils, and so on? 3. How was the questioning, (especially the *Konzentrationfragen*), and were the questions equally divided among all the pupils?

III. *The Personality of the Teacher.* What was the teacher's bearing? Was he fresh, stimulating, and alive in the instruction? Did he master the class by his look and the strength and impressiveness of his voice? Was his language correct, articulated, clear, concise? Was his reading worthy to be taken as a model? Was his personal manner commendable?

IV. *Discipline.* Did the teacher keep the whole class busy all the time? Did he obtain the attention of the different pupils and make them share in the work in equal degree? Did he give them recreation by pauses, opportunity to stand, recitation in concert, and the like? Did he have his eyes and ears open for misdemeanors, or did many things happen which he did not notice or did not consider?

V. *The General Impression* and the Success of the Lesson.

Much importance is attached to the visiting of classes (*Hospitieren*) by the candidates. This is done in a regular and systematic way following the course of the classes and the subjects. The questions given above indicate the points to which observation is directed.

The members of the seminary are divided into groups. All receive instruction in general didactics; in the discussions and practical exercises in special subjects those candidates take part who either are teaching these branches, or who will, in the future, give instruction in them. The instruction in didactics occurs weekly at a definite hour, likewise the instruction of the future teachers of religion;[1] the other groups meet when necessary, though on an average once a fortnight.

The other noted school seminary is at Giessen. This seminary was established in 1876 by Dr. Schiller. The course is one year in length. The number of members is small, but all have taken their doctor's degree. There are different divisions of the seminary — for Physics, Modern Language, Natural History, Gymnastics. The theoretical work is much the same as in the other seminaries already described. Great attention is given to reports in this seminary. Special works are preferred; and more comprehensive works are generally recommended for private study. The monographs recommended are studied for their salient points, and these only are presented to the seminary. The reports are required to be precise, but to omit no essential point. Among the works reported on in recent years have been, in German, articles or books by Von Raumer, Laas, Stauder, Kehr, and others; selections from Frick's *Lehrproben* and from the works of Rein, Pickel and Scheller; in Geography, works by Oberländer, Kirchoff, Stauber, Frick, et. al.; in Hygiene, works by Baginsky, Eulenberg and Bach, et. al.; in History, books or articles by Wiese, Jäger, Biedermann, Willmann, et. al.; and so on, in the other subjects of instruction.

---

[1] A special division of the seminary, consisting on an average of three or four members, have special preparation for the calling of teachers of religion. Their work consists chiefly of practical exercises in giving religious instruction, similar to the practice-work of the other candidates.

Among the subjects of more extended papers in recent years have been the following: "How should Programmes be Formed with Respect to the Demands of Psychology and Hygiene?" "How far does School Life Affect the Character of the Pupil?" "The Nature and Culture of Observation;" "The Significance of Apperception in Instruction;" "What does Herbart Understand by Interest, and is the Cultivation of Interest actually to be Obtained in the Way in Which the Hebartian Pedagogy Supposes?" "The Value of Historical Poems in Historical Instruction;" "Concentration in Linguistic-historical and in Geographical Instruction in Quarta." The aim of this work is not to make writers. In Prof. Schiller's opinion nothing would be worse than to turn a seminary into a school of pedagogical journalism. But, by the preparation of such papers, a fresh and comprehensive view of definite subjects in the educational field is obtained.

Each candidate is required to give at least three test-lessons in each subject—some 30 or 40 in all. These lessons are of increasing scope and difficulty. Careful preparation is made by the candidate, but Dr. Schiller does not recommend *written* preparation, since it tends to formalism and slavery. After the lesson the candidate's work is criticized, as at Jena, first by himself, then by the other candidates who were guests at the lesson, and, finally, by the teacher in charge, or by the director himself. This criticism falls outside the regular hours of the seminary, and, on an average, half an hour is allotted for the criticism of each lesson.

The aim of the seminary is to apply fundamental psychological and ethical principles to education—not to make the candidates swear by any system, but to strengthen them in those facts which are above all systems. From his experience of 14 years, Dr. Schiller gives some valuable results. Candidates are apt to give their own opinions in all discussions, and he deems it one of the greatest services of the seminary to teach men to hold back their own views, even when they have established them, until they can give clear proof of them. "In my opinion, according to my feeling," he says, "are to be sure often legitimate forms of judgment, but they are not to be endured in a seminary," since there the effort should be to accustom men to give psychological and ethical reasons for their action.

Dr. Schiller maintains that one of the great advantages of his seminary is the uniformity in the work of teaching that prevails there. After over 100 young teachers have been instructed in the seminary, he thinks it is clear that there must be unity and agreement in regard to a large number of questions, if the members themselves attain clear views. He does not fear mechanical slavery to a pedagogical system. It would be hard to realize unity in allegience to one system, if it were attempted. Individualism is too highly developed to-day for that.

4. *Seminaries under the Direction of Members of the Provincial School College.* The work in the seminaries conducted by the provincial school advisors is much the same as that described under "school seminaries" above. The members visit and give instruction in schools of the provincial capital, and they receive theoretical instruction from the directors. Where there are two school advisors, as at Magdeburg, they conduct the seminaries in alternate years.

In addition to the seminaries already described, the one at Göttingen should be mentioned, since it is unique in character. It is really divided into two seminaries, one of which is conducted by a university professor, while the other is under the control of the director of the *Gymnasium.* The work of the one is chiefly theoretic, and falls in the university period of study, while that of the other is practical. Many members of the former graduate into the latter. The members of both receive stipends. The work of the practical seminary is of much the usual kind, consisting of teaching, visiting, discussions, criticism, and the like.

The Test Year and the Regulation of March 15, 1890. According to the statute of 1810, each candidate for the teacher's calling was required upon examination to give a test lesson. It soon was seen that a single lesson was useless as a test of the teacher's ability, and in 1826 it was decreed that each candidate should give practical instruction in a high school for at least one year, and thus give evidence of his ability before receiving appointment. This test-year plan has not been deemed especially successful. Paulsen has criticized it as the substitute by which the demand for pedagogical training of teachers for the *Gymnasien* was silenced, but not satisfied. "It is a pretty generally admitted fact," says

Schiller, "that the so-called test-year, although ideally considered it is perfect and a desirable introduction of young teachers into practice, has not generally fulfilled the expectations placed upon it." And Prof. Rein has called it a "wicked abortion." By the new regulation of the 15th of March, 1890, candidates for the teacher's position in the higher schools of Prussia and Hesse, are required, after passing their examinations, to have two years of practical training, a seminary-year and a test-year. The purpose of the seminary-year is to give theoretic instruction, especially in the methods of the special subjects, and to introduce the candidates into the work of teaching. The new seminaries provided for by this law belong to the third class mentioned above, and are in great measure modeled after the one at Giessen. The means of instruction prescribed indicate the thoroughness of the preparation, and will serve as a *résumé* and supplement of what has been said of this class of seminaries. They are: 1. Weekly pedagogical discussions with the director or one of the teachers, with constant reference to the special work of the school, upon the preparation of the teachers for the hours of instruction, the work in these hours, and upon written papers on pedagogical subjects. 2. Visiting the director's classes, or those of the other teachers during the hours of instruction, also the classes in the People's Schools or in normal schools. 3. Experiments in giving instruction by the candidates under the supervision of the director or one of the teachers. 4. Instruction in the use of special school apparatus, particularly for the natural sciences and geography. 5. Participation on the part of the candidates in the teachers' conferences and the class tests according to the advice of the director. 6. Share on the part of the candidates in the oversight of the hours of work and play and the like. 7. Short, written reports upon pedagogical subjects, and a work of larger scope upon a concrete educational subject to be presented before the close of the seminary year.

After the completion of the seminary course the candidates must continue their practical preparation during a test-year. They are allotted by twos or threes to higher institutions, generally to those which have no seminaries connected with them. The work for this test-year is as follows: (a) Under the guidance of the director, or other teachers, the candidates give instruction without pay, for eight or ten hours weekly, in a freer manner and in more connected courses than during the seminary year. (b) They visit classes designated by the director, and take part in class tests and teachers' conferences. (c) So far as individual pupils are entrusted to their supervision, the candidates must report their observations to the regular teachers and offer advice. (d) In urgent cases the candidates may, with the approval of the provincial school-college, give twenty hours instruction per week, and receive pay therefor. (e) Towards the end of the test-year they must present a report of their teaching to the director.

After the director has made his report upon the test-year, the question of the approval or disapproval of the qualifications of the candidates is decided by the provincial school college on the basis of the reports of the directors in regard to the seminary-year and the test-year, and of the observations of the provincial school advisors. The certificate of qualification is refused in case of great lack of pedagogical skill, serious moral defects, physical weakness, or the like. The difference between the seminary-year and the test-year is that the former is devoted chiefly to theoretical pedagogical culture, with constant reference to practice, while the latter, presupposing such knowledge, is confined almost exclusively to practical work in giving instruction. In the former there is greater limitation by theories and examples; in the latter, freer and more independent practice in teaching.

At the time that Minister Von Gossler proposed the new regulation in the Prussian House of Deputies on March 6, 1889, there were in Prussia eleven pedagogical seminaries, of which six had been founded or organized in the last decade. The five older ones, according to the order of their foundation, were those at Berlin, Stettin, Königsberg, Breslau, Göttingen. The six newer ones, those at Magdeburg, Danzig, Posen, Cassel, Münster, Koblenz. These, with the exception of the seminary at Göttingen described above, received students after the period of University life. But the number of candidates who received their training in the seminaries was relatively small. There were at that time only sixty-four candidates in all the Prussian seminaries, while the average yearly number of candidates who completed their trial-year in Prussia was 528. It was a matter of economy to adopt the plan of School Seminaries; for while 70 new seminaries would be required, by dividing the candidates up among a large number of institutions it was estimated that these could be maintained at an average yearly cost of about 1200 marks each, an appropriation of 81,500 marks being sufficient for the whole number. It was further estimated that 60,000 marks should be given in stipends, making only 141,500 marks in all.

In recent years a large number of German writers have contributed to this question of the training of teachers for the higher schools. Upon the main points there is, says Dr. Schiller, substantial agreement. Three things are demanded by all: theoretical instruction of the candidates, acquaintance with a model school organization, and some well directed experiments in teaching. Many different plans, however, have been proposed for the attainment of these ends. The growing sentiment, however, seems to be that the problem can best be solved by seminaries connected with higher schools, which receive candidates after their university course. At least those who advocate this plan gained a victory by the regulation of March 15, and this plan is likely to have a fair trial. Like the test-year it may prove a compromise; but it certainly is an advance. According to Frick and others the *Volksschullehrer* lead in the art of education. They have had their experiment-stations, and the material of instruction being simpler in such schools, more attention has been given to the art of presenting it. In the future, candidates for the teacher's position in the higher schools will receive training somewhat similar to that given in the *Volksschullehrer-Seminarien.* The passage of this law marks a great advance in the training of teachers in Germany. Other provinces probably will soon follow the lead of Prussia and it may be hoped that the movement will extend to other lands. Most other countries are far behind Germany in this respect. England has no seminary for the training of teachers for the higher schools for boys; and the Maria Grey Training College for the preparation of young women who are to be teachers in the secondary schools, is a private foundation. America has only begun to provide for such training. But for more than a hundred years Germany has had higher pedagogical seminaries.

Praise of the work done in the German Seminaries is unnecessary, but a few points are worthy of special notice. Among those which most impressed the reviewer, in a recent visit to some of the most famous of these seminaries, were the careful preparation made by teachers for every lesson, and the attention given by the pupils. There are two kinds of attention in the class-room; individual attention, given by the pupil when it is his turn to recite; and class attention, where all the pupils are attentive whether reciting or not. Teachers in German seminaries are usually able to get the latter. The reason is largely that they have studied beforehand the best method of presenting the lesson.

It is noticeable that the higher pedagogical seminaries in Germany are gradually outgrowing the pedagogy of Herbart. Even Prof. Rein is no servile disciple, and Dr. Frick maintains that he is no Herbartian, but entirely free in his pedagogical teaching. Most Herbartian educators warn their students against making idols of the *Formalstufen.* Herbartian methods, they say, must not be allowed to degenerate into *Schablone*. Voss says that in actual practice, so far as he had opportunity to observe, he found no trace of slavery to method in the schools of the *Franckesche Stiftungen*. The observation of the writer during a short visit corroborates this testimony. Outside of Herbartian circles the criticism of this system of pedagogy is often severe. Dr. Jäger of Cologne, for example, criticises the editor of the *Lehrproben* and *Lehrgänge* as follows: "The system which (perhaps inaccurately and with little appropriateness) is designated as the Herbart-Ziller-Stoy system reminds one with its subtleties of the theology of the Brahmins. As an Indian Brahmin, who before going to sleep subjects himself to self-examination, has to ask whether he has not defiled himself by stepping upon ashes, or by opening a book without the prescribed prayer, or by scratching his head, and so on, so must an orthodox Herbart-Ziller-Stoyaner test himself. Did you not busy yourself in the hour of instruction with *Vertiefung* when you ought first to have concerned yourself with *Besinnung* or *vice versa?* Did you not have *Umblick* when you were only at *Ausblick* or *Vorblick?* Did you not linger at the ethical interest when you ought to have tarried at the human, the personal, or the æsthetic interest?"

Although one finds so much to admire and to commend in German seminaries, one point in criticism remains to be made. The pedagogical literature studied by the candidates seems to be almost exclusively German. Scarcely a book or article in a foreign tongue is mentioned among the works upon which reports have been made in the seminaries. This has its excuse; for a large part of the most important educational literature during the last half century has been in German; but in recent years many valuable works have appeared in English, and certainly no educator can afford to neglect the French educational literature of the last decade. Germany has done more than any other country toward demonstrating that there is a science as well as an art of education; but the time has long passed when any science or art could neglect work done in its field in any part of the world. It would indeed be the irony of fate, if, after so long leading in educational matters, Germany herself should become provincial.

THE TRAINING OF TEACHERS IN ENGLAND.

J. F. Reigart, A. B.

The training of a teacher for the public elementary schools usually begins at the age of 14 with an apprenticeship of four years as a pupil-teacher. As defined by the Education Code, "a pupil-teacher is a boy or girl engaged by the managers of a public elementary day school on condition of teaching during school hours under the superintendence of the principal teacher, and receiving suitable instruction." The pupil-teacher may not be employed in school more than 6 hours a day, or 25 hours a week, and shall receive not less than five hours' instruction per week from a certified teacher. In many of the large cities the required instruction is provided by means of "Central classes" on Saturday and two evenings each week. Candidates, in order to be engaged as pupil-teachers must produce certificates of health and conduct, must be approved by the inspector, and must pass an examination in standard VI. During each year of their apprenticeship, pupil-teachers must pass examinations in English, mathematics, geography, history and music, and conduct classes before the inspector. The final examination is called the Queen's scholarship examination; two consecutive failures to pass will cause a pupil-teacher to be no longer recognized by the department, while those who pass may become (1) students in training colleges, (2) assistant teachers, or (3) provisionally certified teachers.

The pupil-teacher system was introduced from Holland in order to supplant the monitorial system of Lancaster and Bell, which, while it had encouraged the rapid increase of schools on account of its cheapness, had signally failed to impart even the rudiments of education. According to the idea that one who has just mastered the difficulties of a subject is best qualified to teach that subject, infants of eight or ten years were set to work, under the nominal direction of untrained teachers, to impart instruction to their younger companions. The results of the monitorial system were found to be, in 1845, "that only about one in six, even of the children at school, was found able to read the Scriptures with any ease. Even for these the power of reading often left them when they tried a secular book. Of reading with intelligence there was hardly any; and about one-half of the children who came to school left unable to read. Only about one child in four had mastered, even in the most mechanical way, the art of writing. As regards arithmetic, not two per cent. of the children had advanced as far as the rule of three." In 1846 the Education Department established the system of pupil-teachers, in very much the same form as it exists at present. Many educationists have questioned the advantages of instruction given by young pupil-teachers and also the value of practice before professional training; while others consider this feature the chief merit of the English elementary schools. Matthew Arnold, in his Report on Popular Education in France, terms pupil-teachers "the sinews of English primary instruction," "the grand merit of the English state system," and implores all friends of education to use their best efforts to preserve this institution unimpaired. The number of pupil-teachers in elementary schools was in 1851, 5,607; 1870, 14,304; 1880, 33.733; 1889, 30,397.

The Various Grades of Certificates. The Queen's scholarship examination must be taken by all pupil-teachers at the close of their engagement, and may be taken by others 18 years of age. The examination includes the subjects required during apprenticeship, with languages, science and music optional. Candidates who pass the examination are arranged in three classes in order of merit: *Assistant Teachers* have passed the Queen's scholarship or university examinations; they cannot take charge of a school. *Provisionally Certificated Teachers* are pupil-teachers who have passed the Queen's scholarship examination in the first class, and who are permitted to take charge of small schools, but they must obtain certificates by the age of 25. To become *Certified Teachers* they must receive the "parchment certificate" by passing the first and second year's training college examinations, and must serve a period of probation of about two years, and receive two favorable reports from an inspector. *Additional Female Teachers* may be employed in mixed girls' and infant schools to give general instruction and teach needlework.

According to the Education Report for 1890, there were 45,434 certified teachers, 20,242 assistants, 30,397 pupil-teachers, 5,076 additional female teachers. Of the 18,250 masters, 63% were trained (in training colleges) for 2 years, 5% for less than 2 years, 32% were untrained. Of 27,184 mistresses, 41% were trained for 2 years, 3% for less than 2 years, 56% untrained. It must be remembered that a large proportion of those who have not attended a training college, and are therefore classed as untrained, have served as pupil-teachers and assistants under competent instructors.

Training Colleges. There are 43 colleges for training teachers for elementary schools, 17 for men, 25 for women, 1 for both sexes. All are boarding schools, or "Residential Colleges." The code of 1890 permits the establishment of day training colleges which must be attached to universities or to colleges of university rank, but as the plan is considered an experiment, the entire number of day students is limited to 200. In 1839 the government failed in the establishment of a proposed state normal school, owing to the opposition of the established church, which claimed the right to educate all the teachers. The policy then adopted, and continued to the present, is to make annual grants to colleges established by voluntary agencies. The Church of England has 30 training colleges, the British and Foreign School Society 6, the Wesleyans 2, the Roman Catholics 3, and 2 are undenominational. The grants must not exceed 75% of the expenditures, or £50 per annum for each male and £35 for each female Queen's scholar. Additional grants based upon the examinations in drawing and science are given by the Department of Science and Art. The practicing schools receive grants upon the same conditions as other elementary schools. The funds for the year 1889 were drawn from the following sources:

Grants under the code,	£118,161
Grants from Science and Art Department,	5,877
Proceeds from endowments,	1.387
Donations,	16,382
Fees,	22,860
Collections in churches,	161
Books sold to students,	5,751
Other sources,	305
Total,	£170,579

The average expenditure for each student was £60 for males, £45 for females. The fees vary in the different colleges, and even in the same college for different classes of students; the highest are £20 for the two years.

The number of students in 1890 was 3,294; 1,408 males, 1,886 females. All but 9 were Queen's scholars, i. e., those who pass in the first or second class in the Queen's scholarship examinations, and have declared their intention to follow the profession of teaching. In other respects each college settles its own terms of admission. Church schools require an examination in religious knowledge, some require certificates of confirmation or baptism.

The period of training is usually two years; an additional year is permitted by the Code of 1890. The examinations for each year in Arithmetic, Algebra, Geometry, Composition, Grammar, History, Geography, political Economy, Domestic Economy, Needlework, Music, School management, Latin, Greek, French and German, are given by the Education Department; those in Drawing and Science by the Department of Science and Art; and the examinations in religious knowledge by the church authorities or the society for the Promotion of Christian Knowledge. In the subject of Animal Physiology, Professors Huxley and Foster are the examiners. Let me quote from their instructions to teachers. "If an answer exhibits an intelligent and fairly satisfactory acquaintance with the main subject of a question, the examiners do not take much account of want of fulness or of inaccuracy in minor details. The power of writing out statements which have been learned by heart is no evidence of real knowledge; indeed, the process by which this power is acquired is usually antagonistic to the acquirement of such knowledge. Therefore, where there is evidence that answers have been gotten up in anticipation of examination, they will receive but few marks, or may even be rejected. Indeed, a full and in many respects accurate answer may be given by rote, in such a manner as to leave no doubt that the examinee does not understand what he has written, and his rejection is thus ensured." The practical method should be used. The sheep's eye, the rabbit's ear, etc., should be studied, but the teaching must be brought home to the learner. "The examiners are so frequently told 'I have seen this or that,' when it is quite obvious that the seeing might as well have been performed with the eyes shut, that they think it well to remark that, without understanding, there is no more virtue in seeing than in not seeing."

Practice in teaching is required of all students, some time being spent in all the grades. In the Borough Road Training College, each student spents three consecutive weeks in each year in the practicing school, six weeks in all. He has continuous charge of a class, and is responsible for its progress and discipline. As far as possible faults in teaching are pointed out at the close of the lesson in which they are made, but a detailed criticism of the work done is reserved till Friday at a private interview. On the completion of the student's practice, his class is examined in the most important branches of instruction, and the character of the result commented on. Model lessons in sciences are given by the masters of method. In the college the students give three hours a week to criticism lessons, when two students give lessons which are criticised by the other members of the class and by the master of method. Lectures on school management, the study of Locke, Spencer, the National Society's text-book, etc., occupy in most colleges 2 to 3 hours a week. The hours of class work and study vary from about 40 to 56 per week, the class work occupying from 25 to 40 hours. In church colleges Religious Knowledge occupies a large proportion of time, sometimes 5 hours of lectures and as much time spent in study.

The daily routine at Tottenham College for Mistresses is:

6.15	Rise.
6.45 to 7.45	Study.
7.55 to 8.20	Breakfast.
8.20 to 9.	Household work.
9.	Prayers.
9.30 to 11.15	Study (lectures).
11.15 to 11.25	Lunch.
11.25 to 12.15	Study (lectures).
12.25 to 1.20	Walk or drill.
1.25 to 2.	Dinner.
2. to 2.30	Recreation.
2.30 to 5.	Study (lectures).
5. to 5.30	Tea.
5.30 to 6.	Recreation.
6. to 8.10	Study.
8.15	Prayers.
8.55 to 9.20	Supper.
10.	Lights out.

The class teaching at Tottenham occupies 32¼ hours per week, private study 14¼ hours.

In the college for mistresses, students are expected to sweep and dust their own rooms, and to take their turn in doing a part of the domestic work of the college. The leaders of the classes are appointed as monitresses; there are class-room monitresses, dormitory monitresses, dining-room monitresses.

A peculiarity in the management of Bishop's Startford College is that each second-year student has a first-year student given into her charge, the second-year student being known as "mother" and the first-year as "daughter." The "mother" instructs the "daughter" in the college rules and otherwise assists her as far as possible.

At the Borough Road College, once a month each student appears before the principal, and hands in a paper showing the work he has done during the past month in his different subjects. The principal is also provided with statements by the tutors, and he proceeds to examine the man orally in the matters where any weakness or indolence is reported. A record of these oral examinations is kept. Military drill is taught in nearly all the colleges for men. All have recreation-grounds, and some have gardens to be cared for by the students. The teachers in men's colleges are men, and in women's colleges, women. The principals are usually ministers, though there are several women principals.

Each college is subject to an annual visit from an inspector, who reports on the state of the premises and the provision made for the health, instruction and recreation of the students; he hears each of the students read and recite, hears each second-year student give a lesson to a class of children, examines the note books of the students, and listens to a lecture by each of the instructors.

An important criticism of the English training colleges is the lack of connection with the universities. The fault is being gradually remedied; University Extension lectures are delivered in some of the colleges, an increasing number of students matriculate at the universities after leaving the colleges, and Day Training Colleges are now affiliated with the University Colleges of Birmingham, Cardiff, London, Manchester, Newcastle, Nottingham, and Sheffield.

The Training of Teachers for Secondary-Schools.

For many years Matthew Arnold kept repeating "Organize your secondary-schools." As yet little has been done. With the exception of grants for science and art, these schools receive no grants from the government, are not subject to inspection, and no professional certificate is required of teachers. *The College of Preceptors*, Bloomsbury Square, London, was established in 1846 for the purpose of providing a better class of teachers and testing their qualifications. During the first year, 24 passed the examination; during the second, 16; during 22 years, only 500. In 1850 the college undertook the examinations of pupils of the secondary schools; this work grew to be of chief importance; more than 15,000 pupils are now examined annually. The first professorship of the Science and Art of Education in the Kingdom was established in 1873, when Joseph Payne was appointed to this chair in the College of Preceptors. The diplomas granted to teachers are of three grades: *Associate*, *Licentiate*, and *Fellow*. The requirements for the first are somewhat higher than for certified teachers of the first-class in Public Elementary Schools; those for the grades of *Licentiate* and *Fellow* correspond as nearly as possible to those for an ordinary degree and for an honor degree in Arts, respectively, at the principal universities. One year, two years, and five years of experience, respectively, are required. The Theory and Practice of Teaching is an obligatory subject. The college offers, since 1889, four scholarships, two for men and two for women, tenable at any Training College for teachers in secondary schools, at home or abroad, approved by the council.

A *Teachers' Training Syndicate* was appointed by the University of Cambridge in 1879. This body provides for a course of lectures by such educationists as Mr. Quick, Mr. Ward and Mr. Fitch, and examines in the history, theory and practice of education persons of either sex who have passed specified University examinations. The promoters of this plan have thus far been disappointed in the smallness of the numbers taking advantage of the examinations.

A Training College for masters of secondary schools at Finsbury, founded in 1882, failed owing to lack of support. Training Colleges for mistresses have been more successful. The *Maria Grey College* prepares young women for the examinations of the Teachers' Training Syndicate. The number of students is about 50; in ten years 211 have obtained full certificates. *The Cambridge Training College* provides professional training for many young women who have passed through Newnham College and other colleges for the university education of women. In addition to the two special colleges for the training of mistresses for secondary schools, five other institutions had, in 1889, grafted such professional training upon their other work.

The training of teachers of science and art is provided for by the Department of Science and Art, under whose charge are the National Art Training School with 39 students in 1889, and the Normal School of Science and Royal School of Mines with 284 students. Grants are made by the Department to Training Colleges and to University Colleges which have science classes for teachers.

A Kindergarten Training School was established at Stockwell in 1874 by the British and Foreign School Society. Other colleges, notably Maria Grey and Saffron Waldon, train Kindergarten teachers. Examinations for teachers' certificates are conducted by the Frœbel Society.

HISTORY OF METHODS OF INSTRUCTION IN GEOGRAPHY.

BY JEFFERSON R. POTTER, A. M.

The foundation of geography was laid in antiquity. In Homer and Hesiod we find mythical geography; in Herodotus, general geographical descriptions and the demonstration of the influence of the physical peculiarities of each country on changes and events. To Anaximander is attributed the discovery of the obliquity of the ecliptic, the use of the gnomon to determine the solstices and equinoxes, and the invention of geographical maps; and to Pythias is ascribed the connecting of astronomy with geography. Eratosthenes produced the first scientific treatise on geography, measured the obliquity of the ecliptic,[1] determined the circumference of the earth,[2] and established a first parallel and prime meridian. Strabo[3] appears to be the first who conceived a complete geographical "treatise as comprising the four divisions of mathematical, physical, political and historical geography."

In his Natural History Pliny[4] the elder gave a sketch of geography. "*Cogor et e tabula pictos cognoscere mundos,*" from Propertius, shows that this science had a place in the schools of antiquity. The scientific development of geography in antiquity was completed by Ptolemy,[1] who first attempted to put the study on a strictly scientific basis, and furnished the standard text-book till the great maritime discoveries of the fifteenth century.

---

[1] His result 23° 21′ 20″.

[2] His result 252,000 stadia, according to Pliny 31,500 Roman miles, about 25,000 Eng. miles.

[3] Encyc. Brit. Vol. 22, p. 581.

[4] About 70 A. D.

In the Middle Ages military and commercial enterprise enlarged the knowledge of the surface of the earth. Arab travellers and astronomers made valuable contributions. The Trivium and Quadrivium had no place for geography, yet Roger Bacon, Albertus Magnus and Vincenz von Beauvais vigorously advanced the science.[2] The Borgia map, a bronze planisphere, shows the knowledge at the beginning of the fifteenth century. Scientific research, extinguished by the fall of the Roman empire, was first revived in the study of geography as a result of the travels of Marco Polo. Prince Henry of Portugal fostered cartography. Fine maps were produced at Venice. The discoveries of Columbus and Vasco da Gama, and the Copernican system, aroused great interest, especially among the Germans, as is shown by the cosmographies of Peter Apianus, Franck, and Münster, by the growing influence of German map-makers, and by the numerous itineraries and topographies. At this period begins geographical instruction in the German schools.

The great reformers of the sixteenth century demanded a broader course of study. Although Sturm and Trotzendorf ignored geography, Michael Neander published two manuals, broke away from antiquity and gave the recent developments of nations. The Jesuits neglected geography. In the charity school connected with the orphan asylum established by George I. of Hesse-Darmstadt, about 1590, we find the first trace of instruction in this subject in the "*Volksschule*," consisting of reading cosmography on certain days.

In the seventeenth century Galileo gave the telescope, Kepler demonstrated the elliptical form of planetary orbits, Bacon presented the principles of the inductive method, Amos Comenius carried these principles into the service of the school, demanded actual observation and study of things, provided in his Didactica Magna for teaching the fundamental ideas of geography at the home in the "Maternal School," for general geography and the native land in the "Vernacular School," and for maps and astronomy in the Gymnasium. John Locke regarded this subject as a science of observation, and urged the use of globes and maps. While such apparatus came into use, the instruction was very poor.

---

[1] His system was composed about 150 A. D.

[2] See especially for the history here and in what follows Geistbeck, in in Kehr's Geschichte d. Methodik.

In the first half of the eighteenth century advance was made through Francke, the chief representative of the Pietists. Palestine, and Germany received most attention. The instruction was given mostly in the manner of play outside of school hours, by excursions and by visiting shops, in making collections, etc.,[1] and was based on the principle, "*Non multa sed multum.*" Geography was placed in the position of an independent science rather than as appendage to other sciences, especially history, as before that time. The methods of the Paedagogium at Halle furnished a standard for most schools of northern Germany.[2] Joseph Hübner treated the subject from an historical and statistical point of view, with questions and answers, and neglected physical geography. He arranged his materials without regard to natural relations, and concluded with the elements of mathematical geography, in which he opposed the Copernican system.

Geography was introduced into the high school at Edinburgh in 1715, and gradually into the other schools of Scotland with the use of globes and maps;[3] into the Prussian schools in 1763, by decree of Frederick II; into the course at Würzburg in 1774; and into the Principality of Fulda in 1775.

In Émile, Rousseau demanded things rather than representations; and caused a pedagogical revolution near the close of the eighteenth century. "For Émile, the first two points in geography shall be the city where he lives and the country-residence of his father; then the intermediate places; next the rivers in the vicinity. . . . . Let him make a map of all this for himself."[4] The philanthropists assimilated and systematized Rousseau's principles. Salzmann[5] (1744-1811), emphasized "Heimatskunde" as the condition of intelligent study of other countries; Schütze demanded the synthetic course, gradual advance at first, the use of maps, globe and planisphere, the drawing of the boundaries of countries free-hand, and the geographical play hour; Johann Christoph Gatterer aimed at the systematic arrangement of the facts, according to natural relations, and was the forerunner of comparative geography; Herder[6] (1744-1803), regarded geography "as the basis and auxiliary science of all studies which we most prize and value." "In short, geography is the basis of history, and history is nothing but geography of times and peoples in motion." He emphasized physical geography, the causal relation of the different factors, the influence of nature on man, and the conquests of man over nature. "Charge geography with aridity!" says he, "we might as well charge the ocean with dryness." Gaspari laid stress on historical geography, and first presented different courses of study. His work on methods of instruction, published in 1791, passed through many editions and was widely read.

---

[1] Lindner: Handbuch der Erziehungskunde, p. 285.
[2] Richard Trampler: Die Constructive Methode.
[3] James Grant: History of the Burgh Schools in Scotland, p. 395.
[4] Émile, Book III.
[5] Lindner: Handbuch der Erziehungskunde, p. 766.
[6] John B. Dalsh: The Study of Geography, Education, January, 1888.

The "Kinderfreund" of Rochow (1734-1805). had a great influence in introducing this study into the "Volksschule," treated of the elements of the science and the use of the globe, and furnished geographical parts for reading two hours each week. Similar works appeared; attention was given to geography in the primary schools; and gradually the gymnasium introduced this study. The principles of Rousseau were rarely applied. The analytical method is found in Wilmsen's "Kinderfreund."

In the nineteenth century, Pestalozzi (1746-1827) recommends the synthetic course, and the method of beginning with the child's immediate surroundings in observing the little tract of country where he lived, not upon the map, but upon the very soil, in order to prepare the way for a comprehensive view of the history of the earth and man and their mutual influence. His maxim, "The absolute basis of all knowledge is observation," was often opposed by his practice in teaching. The realization of his ideas came in great part through his pupils, especially Tobler and Henning. The book of Henning in a series of parts treats of the geography of the home, of the divisions of land and water, meteorology and climate, minerals, plants and animals and man, the political institutions and the elementary ideas of astronomical geography; then he gives the general topical geography divided into physical and political. He regards synthesis as the natural course, emphasizes the physical factors, seeks to trace the influence of nature upon the development of man, urges the comprehension of everything in its reciprocal action and insists on the self-activity of the pupil. The chief merits of the work of the followers of Pestalozzi are the comprehensive study of the home and its surroundings, the placing of the physical factor in the foreground, the emphasis upon the causal connection between geographical factors and the arousing of self-activity in the pupil.

Karl Ritter regarded the earth as the home of man, and aimed to convert knowledge derived from the most unlike sources into organic unity, to give a vivid view of a country as a whole, its natural and artificial products and of the world of man and nature, in order to show their reciprocal relations. "The land affects the inhabitants," says he, "and the inhabitants change the land, hence physical geography is the basis of geography." The materials for new paths were furnished first at Ritter's time in the foundation of geology and oceanography, in the determination of the laws of terrestrial magnetism, the pressure of the atmosphere and its hydrographic phenomena, the laws of the currents of air, in the outlines of plant and animal geography, etc. His creative work was made possible by Humboldt, who sketched the first profile section of a country and made important maps, was the founder of comparative orography, laid the foundation of plant geography by his mathematical and hysometric determinations, gave by his map of Central Asia a completely new form to the relief of the great continent in accordance with principles retained to the present day, opened the way to the science of volcanoes, and a deeper penetration into the phenomena of terrestrial magnetism, established isotherms to furnish light on the field of meteorology, and whose genius was exercised upon almost all fields, almost everywhere produced new sciences, new methods and new sources of geographical knowledge. Ritter published two works on method, favored the synthetic course, map-drawing and the constant use of maps, urged the use of numbers in measurement and comparison of measurements to develop in the pupil ideas of distances, heights and areas, and required self-activity. Thus Ritter was the founder of modern geography. Some of his ideas were expressed before, but he first made them vital. The title of his chief work consisting of nineteen volumes gives the key to his geographical teaching, "Geography in Relation to Nature and to the History of Man" (*"Die Erdkunde im Verhältniss zur Natur und Geschichte des Menschen."*) From 1820 till his death he was Professor of Geography at the University and Military Academy in Berlin.

Peschel laid emphatic stress upon the value of number relations, and upon making the map the center of instruction. "Let the teacher," says he, "seek wholly to dispense with the book, to depend only upon the map and to lead the pupils to discover from the map the characteristic features of the nature of a country."

Recent discussions relate to the order of geographical stages of instruction, means of teaching by observation, and map-drawing.

METHODS.

The so-called analytical method begins with the general relations of the earth as a heavenly body and ends with the home;[1] proceeds from the whole to the parts;[2] "takes up the attributes of the earth and its several parts (one by one) in logical succession, pointing out the causal connection between them . . . . . deals with the earth as a whole, so that all the details afterward learnt may fit into their right places and be always understood to be parts of a whole."[1] It is strictly systematic and bears a scientific stamp, but it necessarily assumes the most general and important geographical conceptions and consequently is adapted to schools of high grade.[2] As stated in the directions to the Royal Cadet Corps, "this mode of treatment pre-supposes some familiarity with phenomena, some mathematical and physical notions, and a somewhat matured understanding."[3] As supporters of this method may be mentioned, among educators, Guts Muths, Niemeyer, Gräfe and Waitz; among authors of text-books, Berghaus, Roon and Cannabich.

---

[1] Kehr: Die Praxis der Volksschule, p. 319.

[2] Lindner; Handbuch der Erziehungskunde, p. 313.

It is favored by most writers on method, is adopted in the course of most text-books,[4] and is the established method in most schools of high grade.[5] In its application A. Kirchoff's Schulgeographie, "Sydow-Wagner's Methodischer Schulatlas," Adolf Mang's "Universal-Apparat" and "Tellurium-Lunarium"; the globe of A. Brix, the black globe, Hirt's "Bildertafeln" and Hölzel's "Geographische Characterbilder" furnish the equipment for thorough and successful work in the hands of a skilled teacher.

The "synthetic method"[6] begins with a single portion of the earth, adds the other parts, and finally unites them into one whole; it imparts the necessary preliminary geograhical notions; it constantly uses the knowledge gained in the locality already considered in illustrating the unknown in the localities to be studied. The usual way is to begin with the home and proceed to the province and native land and then add the corresponding continent and other divisions and close with the earth as a heavenly body, but one could begin with the simplest, most undeveloped form of country and gradually pass to the more richly developed. It is an elementary method, is adapted to the powers of the pupil, advances from the near to the far, from the known to the related unknown, from the simple to the complex, from the easy to the more difficult, and is best suited to geographical instruction in primary schools and the lower classes in secondary schools. Among its adherents were Ritter, Henning, Harnisch, Diesterweg and Graser. The "Berliner Schul-Atlas" (1889) by R. Andree and R. Schillmann and the "Elementar-Atlas" by Justus Perthes are designed for the synthetic method. The Prussian code provides for essentially synthetic instruction illustrated by diagrams, by the terrestrial and celestial globes, and by maps.[1] The objection that this method withholds too long from the pupil a survey of the earth as a whole, and especially the understanding of the astronomical phenomena daily occurring before his eyes, may be removed by giving a general outline of mathematical geography and the divisions of the earth directly after completing the study of the native land.

---

[1] Sonnenschein: Educational Codes. Directions for Geographical Teaching in the Royal Cadet Corps, (Prussia), pp. 152-153.

[2] Trampler: Die Constructive Methode, p. 6.

[3] Sonneuschein: op. cit. p. 152.

[4] Lindner: op. cit. p. 313.

[5] Kehr: op. cit. p. 319.

[6] Oberländer: Der Geographische Unterricht, p. 125; Trampler: op. cit. p. 6; Kehr: op. cit. p. 320; Lindner: op. cit. p. 314.

III. The "concentric-synthetic method"[2] divides the entire geographical material into several courses, or circles, which are concentrically expanded according to the age and comprehension of the pupils. The entire range of the subject in its simplest outlines is considered in the lowest course, the same is enlarged in the second stage, and finally completed in the last year. This offers an opportunity to make use of the comparative treatment of the subject. As nothing actually new is offered in the successive courses, a living interest is likely to be stifled. Among its supporters may be named Lüben, Körner and Oberländer. Dr. Jütting and Hugo Weber have systematically arranged the material for a course of four years according to this method.[3]

IV. The "constructive method"[4] seeks to give a graphic representation of geographical objects, and makes map-drawing its main feature. The pupils not only follow the statement of the teacher, but at the same time draw the sketch of the earth, or a part of the same, thus getting a vivid impression of the map and insensibly fixing in memory a great number of the places to be learned. In its substance it can be analytical or synthetic. Partly suggested and partly supported by Ritter, numerous works have appeared since 1825 in support of this method, among which are those of Lohse, Agren, Oppermann, Dielitch and Trampler. Some demand too much outside apparatus, others burden the memory with the numbers of latitude and longitude, others take too large and complicated a region as an object for drawing. Recent writers, as Kirchoff, Wagner, Lehmann and Matzat, have rendered service in simplifying the subject. In the directions to the Royal Cadet Corps[1] it is recommended that by the side of the "Heuristic" the "Drawing method" should be used, as "nothing can stamp the forms of the map so deeply on the memory as repeatedly drawing it. . . . . The map drawing must be restricted to the production of simple sketches, and must be taught in the class . . . . and the sketches are to be projected in accordance with the methods of modern chartography." The representation of the outlines of a country by rectilineal figures, the river courses by characteristic points to be fixed in memory (Lohse's method), the loading of the memory with a mass of auxiliary lines and geometrical figures of no value in themselves (Dronke's method), and the indicating of mountain chains by thick strokes (Von Seydlitz; hand-drawings by Kaufmann and Maser), are condemned. The "Drawing Atlas" of Debes, Lehmann and Kirchoff is recommended. This method adopts the meridians and parallels as the most natural auxiliary lines. Without much technical skill or great expenditure of time, simple sketches, answering the purpose, can be produced. Curves bulging outwards are recommended for representing mountain chains. The Kirchoff-Lehmann method, while commended, is not set up as the only available one.

---

[1] Sonnenschein: op. cit. p. 142.

[2] Oberländer: Op. cit. p. 139.

[3] Lehrbuch für Anschauungsunterricht und Heimatskunde. Leipzig, 1878.

[4] Trampler: Op. cit.; Oberländer: op. cit. pp. 128-136; Kehr: op. cit. p. 320.

V. The "associating method" aspires to a complete union of ethnology, history, natural history, and even physics with geography,[2] into one branch, which is generally designated as "Weltkunde." Rienhaus[3] has prepared a work of this nature for the "Volksschule."

Kehr suggests that the teacher should employ the method suited to the stage of development of the pupil. According to Seibert,[4] the course of instruction can be only two-fold, analytical and synthetic, and indeed here analysis and synthesis constantly appear side by side. On the one hand, in order to produce a complete picture by combining the parts, is not synthesis indispensable? And on the other, in order to understand the parts of any unit considered, is not analysis essential? When we speak of the drawing (constructive), concentric and grouping methods, wo do not use the concept *method*, in the usual pedagogical sense; for, although drawing is indispensable in successful teaching, yet it takes only the place of a means; and with the expressions concentric and grouping methods are designated only certain ways of dividing the material. The grouping method places similar objects together, and may be used to advantage in reviews. Matzat[1] explains the working up of geographical material for elementary teaching on the Herbart-Ziller principles .Dupuy[2] commends the intuitive method and the synthetic course, modified at the end of the elementary course by a general survey of the earth and its divisions. Compayré favors the method which "starts from the village or the city where the pupil lives, and extends from place to place till it finally embraces the entire earth. The child must not be kept too long on these preparatory studies. . . . . General geography ought to be combined with local geography."[3] Laurie commends taking an outline study of the globe after extending the home study to the county, then the British Empire and other parts of the earth.[4]

---

[1] Sonnenschein: Op. cit. pp. 158-160.

[2] Trampler: Über die Zweckmässige Anlage für Volks-und Bürgerschulen, pp. 14.

[3] H. Rienhaus: Weltkunde, Bremen, 1879.

[4] Seibert: Op. cit. p. 3.

In the codes of most European countries geography is a prescribed study.[5] Germany is the model followed by most continental countries. "Only the Greeks," says Fischer, "have produced a Strabo and a Ptolemy, only the Germans a Humboldt, Ritter, Peschel, Richthofeln."[6] The elementary stage is known as Heimatskunde, combined with or preceded by teaching by actual observation. Excursions to districts around the school and during holidays to distant places is an essential part of this work as planned by Dr. Finger, who may be regarded as its inventor. The reading and understanding of maps is constantly kept in view. "The ideal aimed at is to have one continuous course of geographical instruction from the youngest school year up to the University. The elementary stage is met with in practically all primary schools in Germany and in the preparatory classes of the higher schools."[7] This stage is rapidly finding its way into the corresponding schools of most other Continental countries. "In the average German Realschule and Gymnasium, the pupils leave school with a sound working knowledge of geography." Twelve of the twenty-one universities have professors of geography on a footing of perfect equality with other professors. The degree of Doctor of Philosophy and Facultas Docendi are conferred. Austria is following Germany very closely. No country has shown greater progress than France during the past twenty years, a progress doubtless due to the moral effect of the disasters following the invasion and mutilation of their territory by foreigners, who by means of their maps seemed to be at home.[1] Recent progress in Italy has been of the most radical and hopeful character. In Switzerland, the "classic land of reliefs,"[2] geography occupies an important place. In Belgium, Holland and Sweden wise provision is made for this subject. In Spain, the geographical excursion is a feature worthy of special attention. Of England Mr. Keltie says in his report: "In this country it is believed that as anybody can teach the subject, so anybody can write a text-book of it."[3] Geography was neglected by the great public schools "because it did not pay." Mr. Keltie's report and the Exhibition of Educational Appliances in 1885-86 were attended with success. Lectureships have been established in the great English universities, the public schools treat the subject with respect, the University Extension program gives it a prominent place, teaching has been greatly improved in the elementary schools, and text-books, atlases, maps and other appliances of a high standard are being issued.[4] School authorities, practical educators, and geographers agree that a general education should include a certain proportion of geographical training;[5] that the introduction to the subject should be given by a comprehensive knowledge of the home based upon observation, combined with the understanding of maps; that physical geography should be emphasized; that outside of Heimatskunde instruction should based on globes and maps;[6] that the causal connection of phenomena should be shown as far as possible, self-activity aroused, map-drawing employed, the needs of practical life constantly regarded; that the teaching should not degenerate into communication of mere nomenclature, and that an excess of names and numbers should be avoided.

---

[1] Methodik des geographischen Unterrichtes.

[2] M. P. Dupuy: La Géographie dans l'enseignement primaire. Recuil des Monographies Pédagogiques, Tome IV.

[3] Lectures on Pedagogy. Payne, pp. 369, 370.

[4] Addresses on Educational Subjects, p. 104.

[5] Royal Geographical Society, Educational Reports (J. Scott Keltie), 1886.

[6] Die Fortschritte und die Entwickelung der geographischen Wissenschaft in den letzten fünfzig, Jahren p. 4.

[7] R. G. S.. Edn. Reports, p. 39.

---

[1] Compayré, Payne: Lectures on Pedagogy, p. 362.

[2] Diercke: Die Anschauungsmittel für den geographischen Unterricht, Methodik des deutschen Volksschulunterrichts.

[3] P. 23.

[4] J. Scott Keltie: Applied Geography, Contemporary Review, Sept., 1888.

[5] Matzat: Op. cit. pp. 49.

[6] Kehr recommends as further means of illustration the excursion, sand or clay, pictures and the stereoptican. Op. cit. p. 320-21.

LITERATURE AND NOTES.

I.—EDUCATIONAL BUILDINGS.

Statistische Nachweisungen, etc. Berlin, 1883.

This valuable and last decennial publication comprises descriptions of each public building erected during the decade ending 1880, including churches, parsonages, school-houses, gymnasia and real-schools, seminaries, turn-halls, university buildings, scientific institutes, technical institutes and hospitals. The method of presentation is as new as it is convenient and interesting and is the result of long discussion by the society of architects and engineers. To each building fifteen tabular columns are devoted extending across two quarto pages. These comprise the following items: The current number under its class, the place and name of the building, the province and administrative section, dates of beginning and completion, *a small ground plan of the entire main story*, the entire surface built upon and how much of it is cellared, the length of the cellar, first story and roof, cubic contents of the entire building, use-units (Nutz-einheiten, i. e., number of pupils, classes and cubic and square meters per pupil), estimated cost, actual cost in total, per square meter, per cubic meter and per use-unit, cost of bare building and of inner finishing and of single special parts, cost of heating apparatus total and per cubic meter, gas apparatus and plumbing, also total and per cubic meter, material of the foundation, walls, facade, roof, ceiling and stairways, miscellaneous remarks. Thus the entire story of from five and six to twelve and fifteen buildings is told with all the above items on a couple of pages. The estimate of total cost, and of heating, lighting and plumbing per square and cubic meter is a new and valuable basis of comparison.

Relevé Général des Constructions Scolaires. Paris, 1889.

This heavy official quarto contains an account of the school buildings erected, bought or repaired in each department of France from June, 1878, to June, 1885. Everything is in tabular form. The first column contains the name of the commune, the next its population, the third its class, whether for boys, girls, or both. The following columns specify the number of new buildings, those enlarged, repaired or refurnished, the number of class rooms, the number of pupils provided for in the entire building, the dates of the ministerial order according state aid and authorizing the building, the sum devoted to new buildings, including furniture, and that devoted to changes, repairs and purchases, how much of this is borne by the local school treasury and how much comes from other local sources, how much from the department and how much from the state, what is the expense of each new building per pupil provided for, and sometimes per class room, and the number of pupils enrolled. Our state reports and even the Bureau of Education should take several hints here.

Die Cultur-Aufgabe der Volksbäder. Dr. O. Lassar, Berlin, 1889.

"A bath a week for every German," is the motto of this excellent pamphlet. Ancient Rome used daily 750 million liters of water, while modern Berlin with all its water works, sprinklers, etc., uses but 100 millions per day. Rome had 856 baths for the people. Besides these were many private baths, and the 14 gigantic *thermae*, which arose between Augustus and Constantine, each of which could accommodate thousands of bathers at a time. *In Balneis Salus*, was the devise which Pliny said caused Rome to have no need of doctors. As modern art received its impulse from the ruins of antiquity so may bathing now be reinspired from the splendid marble and silver columns, statues and pictures of the ancient baths. It came to Rome from Greece, and to Greece from the Orient where bathing had an elaborate technique as a religious rite. The marble baths of Diocletian and Caracalla, the ship that Archimedes built for the tyrant of Syracuse with complete water works and warm and cold baths aboard are gone, but the Vienna warm baths in winter for cold poor people, and many modern institutions are signs of a renaissance. Teutophillic Tacitus describes how the ancient Germans bathed and swam from earliest youth in cold water, and soap was one of their few articles of export. The bathing instinct seems lost from the Occident later till it was re-imported from the East by the Crusades, and in the later middle ages thousands of bath-rooms were open to Germans of all classes. Bath-building is, however, not a lucrative business. The costly linens, salves and ointments brought from the East were thought to have aided the baths in the spread of the direful contagious epidemics that depopulated Europe, and made its people fear not only baths but even all contact with foreigners. German baths were all lost in the 30 years' war. Now Germany is far behind other lands, even Russia, Japan and Turkey. There is not a bath to every 30,000 inhabitants, and very few paradigmatic ones in the entire land. One bath a week in Germany would require two billion baths in 45,000 bathing institutions, each with 10 basins and in use all day and evening. There are now only about 1,000 good and bad. In North Prussia there is one bathing establishment of five tubs to every 49,000 inhabitants and in winter these are open but one day per week. In another district there is one bath for every 38 inhabitants, or one bath for each individual every 800 years. Has the modern German hydrophobia? He loves to have his pavements washed, his jails, hospitals and houses, and even clothing disinfected, fears the ubiquitious disease-bringing bacteria, but will not bathe. The bath-habit is the keystone to the arch. Dr. Mittmann found 78 different species of bacteria in the dirt of the finger nails, and the number of saprophytes we carry about in skin, hair, clothes and shoes is legion. To be rid of these is one of the rights of man, and cleanliness inspires purity.

The later practical part describes a number of recent public baths in Germany with ground plans and a few elevations and vertical sections. Of all forms standing douche baths in individual closets are preferred. These require least water, take least time per bath, require least attendance, less expense for building, and leave at least as agreeable reaction as any, is the form most often chosen where many forms are available, and infection is least possible. A trifling fee of five or ten cents includes towels and soap (tally is often best kept by the latter) sometimes not only defrays expenses but yields a small income. Disinfection rooms and apparatus are usually found. In Göttingen first, and later in Breslau, Frankfort, Madgeburg and elsewhere, a system of public school baths has been established. Several large employers of labor have erected free baths for their workmen.

Die Turnhallen und Turnplätze der Neuzeit. G. G. **OSTHOFF.**

This valuable little volume describes many of the most recent gymnasia and athletic fields in Germany with many ground plans, and with cost, often itemized. The former have nearly all been built on the same general plan-type, whether for men, women or children, but with many minor variations. There is nearly always an entrance hallway large enough for one class to wait for a preceding one to finish, an apparatus room, a dressing room and a teachers' room. The main room should have the length to the breadth as three to two by a height of from five to six meters. For fifty primary school children its dimensions should be 9.9x15.7 meters. Vienna, Munich and other cities prescribe these dimensions exactly. By measuring the greatest arm reach and the distance from shoulder blades to the end of the longest finger extended horizontally in front, Longe decided that for upper gymnasial classes a minimum floor surface of 2.46 square use-units be allowed. If the exercises require one step front, back, and to right and left, allowance must be made for this. In Saxony for 12 to 14-year old children a minimum surface of four square m. is required. The best measurements of the "breadth and depth" of the average pupil in each school class were those made in Chemnitz, where the rule was formulated that for fifty upper class children 152 square m., and for apparatus 48 square m. floor space was needed, for common schools 4 square m. per child; for upper real and gymnasial classes, five, and for men, six square m. per man. Of all the many floors good boards are best, and perhaps tan bark kept moist and dustless by salt next best. Board, however, gives some elasticity and a noise which is needed to keep time and mark step. Somewhat soft asphalt might be better than all, but has not yet had a good trial. Its proper composition is discussed. The walls must be panelled with pine or oak head-high at least. The rest and the ceiling (if not formed by the roof) plain colored. For heating, stoves are preferred because they give uneven heating. Windows must be high and not southward. Window ventilation is most common.

Athletic grounds should directly join the gymnasium, and have open sheds for rainy weather and to protect the more elaborate fixed apparatus. It must have much shade but not of pine, for its needles make the ground too slippery, a firm, porous ground of lawn and sand, or sod, (Angerstein) and must be perfectly horizontal. Movable apparatus is more and more preferred to fixed, in the hall, and fixed out of doors. Apparatus is not detailed.

Descriptions of individual institutions follow with 25 plans. In the Berlin hall, four city schools exercise by classes in rotation and from 200 to 600 are directed at once. These and the many adult societies fill it through nearly the entire day and evening. A deep gallery extends entirely around the main room. Forty-one special institutions are specified with cost, with literature for further study at the end.

Grundriss-Vorbilder von Schulgebaüden. L. KLASSEN, 1884. pp. 272.

This volume contains 108 text plates and sixty final pages full of ground plans, and its scope embraces all kinds of schools from the lowest primary to technical schools and universities. The schoolhouse now exerts an influence upon the physical and mental development of people hardly less than the dwelling-house. In most German states the dimensions of schoolhouses are regulated by law or ministerial ordinance. The norms of Düsseldorf and Vienna, which are recent, are reported in extenso. The following are the chief points: The building spot must be dry, sunny, free as possible from noise, bad smells, dust, drinking places and graveyards. It must not open directly on the street, but if possible have a garden or gymnastic plot between it and the street. The lower floor for smaller children must have a cellar under it; girls and boys must have separate entrances not only into the schoolhouse, but into the schoolroom if possible. All walls must have an isolating layer of asphalt to prevent the ascent of ground moisture, and around the building without there must be a plastered water-table at least one meter wide. The walls must have vertical air chambers. The roofs must be fire proof, and have eave spouts. The lower floor must be at least one half a metre above the street surface, and floors and ceilings above must be double with sound deadening layers. The ratio of length to breadth must be as 2 to 3, or elsewhere as 3 to 5. The floors must be smooth, tight, of not too soft wood, linseed oiled boards, the thickness of which is proportionate to the distance of the joists below. Walls must be of light blue or green grey, and the ceiling perhaps white. The doors must be at least one meter wide, and opposite the windows if possible, but never behind the seats of the children. The windows are best if towards the southeast. Direct or reflected sunlight must be prevented, and seats should be so arranged that the light enters on the left of the children. Light from behind or in front is not permissible. The lower window casing must be at least one meter above the floor, and windows must go as near to the ceiling as possible. The higher the light enters, the better and deeper the room can be made. The window surface must be one-sixth that of the floor and larger if light is obstructed. All windows must be openable, and the wall surface between them must not be more than 1.25 meters wide. For every 100 cubic meters of space there must be an heating surface of 1.25 square meters of an iron stove, and 5 to 6 square meters of a turf oven, which should stand on the window side. The temperature must be kept at 16 to 20 c., measured by a thermometer that hangs 1.5 meters above the floor, and where the average temperature of the room is recorded. The upper panes in all windows must open as well as the windows on an horizontal axis, and the opposite wall must also have openings for ventilation. Air passages through floor and ceiling must also be made; the former, by which air enters, should be between the stove and the wall nearest it. With furnace heating, some other efficient system of ventilation is required. Stairways must be light, wide, draughtless, never be less than 1.25 meters wide, must never pass straight from story to story, nor be spiral. Two or three breaks,—landings with pedestals are best. Steps must never be over 19 centimeters high. Beside the solid banister, the wall side must have a running hand-arm. Out-houses must contain a minimum of two seats for 80 boys and three for 80 girls, must be outside the building, separated, each light, ventilated, with doors fastened within. Each room must be at least 1.4 meters deep and 7 meters wide. The seats must be from 35 to 75 centimeters, according to age, with air-tight covers. The receptacle beneath must be water-tight and ventilated with a flue. The whole must be on the leaward side of the schoolhouse from prevailing wind. The play-ground must allow at least 2.5 square meters for each pupil, quickly dry, covered with fine gravel, with apparatus, seats and sheds for rainy days, and a pump. Seats must fit the height of children, and allow each at least 55 to 60 centimeters breadth. Between the front row of seats and the front wall must be a space of at least 2.5 meters, and 40 centimetres between the back seats and back wall, and a walk of 75 centimeters wide between the seats and the blind wall. The teacher's desk should set on a platform 2.5 meters long, 1.25 meters wide, and 15 centimeters high. Soup-kitchen, school garden, wardrobes, etc., are also described. Larger schools have conference rooms (sometimes also used for apparatus), winter gymnasia, study room, or aula, etc. In France and Belgium covered courts and longer seats on two or more sides of the room are common. In most there is more space per pupil in the building on the whole (though not perhaps in the school-rooms) than in American schoolhouses. Most schoolhouses contain also residence for the teacher and his family, cut off as much as possible from all contact with the school-rooms. In institutions such as pensionates, alumnates, seminaries, etc., where pupils reside, eating rooms must allow each pupil at least 9 square meters floor surface, and sleeping rooms six square meters to every bed. There must be at least 1.5 meters between each bed, and if these are arranged in two rows, there must be a broad walk between them. The temperature of sleeping rooms must not fall below 10° R. in winter. Each sleeping room must be watched over by a *prefect* who shall sleep in or next it. Courts with buildings next them on all sides are forbidden. The play-rooms for bad weather must allow 20 cubic meters for each child. In bath-rooms water must never exceed 27° R. The sick room must contain a bed for every 10 pupils, and 28 cubic meters of air must be allowed for each. Music and practice rooms are also regulated by official programs. Sometimes as in the admirable Pestalozzi seminary at Dresden, (1875) residence, schoolhouse and gymnasia are separated by garden spaces. Sometimes all is built around a large court (St. Chad's school, Deustone, 1869). Sometimes kitchen and dining room are almost separated in an ell (seminary at Carlsruhe, at Bevent. Gymnasia are of course in a sense simpler than real schools, for the former require little space for laboratories or museums (south light). Both of the first class have 8 or 9 classes, and require 18 to 19 class rooms of at least 56 square meters floor surface for from 40 to 50 pupils, classes often being divided and conducted in parallel courses. Lately a drawing-room (north light) must be included, as well as a music room, besides library and reading-room, and occasionally a "carcer" or prison room, besides, of course, residence for directors' and servants' family at least. Some of the new real schools (e. g., Magdeburg, Hannover, Dresden) are very fine. The F. Werdesche gymnasium in Berlin, with the real school on the opposite street, the residence, building, playground (as usual, never turfed nor paved) and the gymnasium between the rear of the two schools and common to both is an admirable combination. The academic gymnasium in Vienna, with a remarkable *aula*, that at Waldenburg and that at Hildesheim are good illustrations of the recent best. Great attention is also paid to school seats and desks, which have so great influence upon spine, headache, digestion, circulation, eyes, and the Kunze seat with vertical plank curved to the shoulder blades, and those of the Berlin school board are now widely used, many other forms are coming in, however, and the problem is not yet solved. Trade schools, which were intended to fit for both technical high schools and for industrial careers, did not succeed. Therefore, in 1878, a commission made the radical change of separating these two and prolonging the preparatory part of the course. This caused modifications in the buildings since that date. Stevens institute, Owen college, the Chatham institute for military engineers, the navigation schools at Leen and at Altona are selected as types. For polytechnic schools a building program worked out by experts in 1872 and with 40 specification stands. Some of these are unique, e. g., libraries must not open southward for sunlight is bad for the books; all gas and water pipes must run uncovered on the sides of the room; wherever class rooms look upon the street, the latter must have asphalt; steps from the street to the first floor must be inside the building; the dwelling rooms of the entire personnel of the institute must have south exposures, etc. The polytechnicum at Braunschweig, that at Aix la Chapelle, at Dresden, at Munich, and at Berlin, are described. Among art schools the Ecole des Beaux Arts in Paris is, of course, best. When it was decided in 1863 to confine the Louvre collection to original works and transfer all copies to the Ecole, the need of new space here caused the glass covering of the magnificent court.

Der Schulhausbau. A. HITTENKOFER, Leipzic 1887, pp. 240.

The author is an architect and hygienist and has illustrated this admirable work by over 200 cuts and with constant reference to the detailed hygienic and constructive legislation of the various German States. Within these the larger cities have developed special regulations and the history of these school building laws, and norms which have developed since the Prussian law of 1867 would of itself make a very interesting chapter. The site must be dry, quiet, free from dust, the shool-house must stand in the middle of the yard which must contain gymnastic apparatus and if possible a school garden. If practicable the building should face north, and south is least desirable. The building must be at least 18 metres from the nearest building. The walls must be strong enough for an additional story. Young children must occupy the lower rooms. Many special precautions are required to keep the walls dry. The depth of rooms must correspond with the height of the windows. For each child Prussia requires a square surface of at least .75 squares metres in lower classes and increasing to 1.2 in the upper class; Bavaria 67; England .743. The height of the rooms ranges from 3.20 to 4 m. The latter increases cost of building and heating and makes the effort of speaking and hearing greater. Prussia requires 1.92 cubic metres of space per child, England 2.24, Hamburg 3. to 3.33, Bavaria 1.99, Switzerland 6.50. Extended measurements of the length of the body, the distance from sole to knee and from seat to elbow for average, large and small girls and boys for each year from 8 to 16 have been made by Zwez, Pappenheim and Fahrner, and are the data for the dimensions of school seats and desks. The desk is now usually separated from the seat by a "minus distance," i. e., overlaps it by 2.5 centimetres. The desk must be 15 per cent. by boys and 16 per cent. by girls of the entire length of the body, above the seat. The seat must be 28. to 30 per cent. the body length above the foot board so that the heel and toe rest squarely on the floor. Backs are now made lower than formerly, but reach to the middle of the shoulder blade and tip back in ratio of 1 to 12, and desks are inclined in the ratio of 1 to 5 to 1 to 6. Each pupil must be measured and fitted to his seat at the beginning of the school year. The top of the desk or seat are often moved back and forth. Narrow and upright backs are preferred. The floor must be splinterless hard wood. In Hamburg cross-sections are used under desks, and Saxony legislates how the cracks shall be closed up. Walls must be light blue, green or gray, and uniform tint and smooth. Pillars are illegal, partition walls between two rooms must be at least 12 cm. thick. Doors must be one meter wide and open outward, with windows above opening inward, the crosspiece high that the number it bears may be better seen. By the law of 1873 windows must be on the left, and the window surface must be ⅙ to ¼ that of the floor. The tops must be square, and as near the ceiling as possible. The upper part must open on an horizontal axis, and be entirely coverable by vertical half bleeched linen curtains. By artificial illumination there must be at least one flame of gas or oil to every seven pupils, not including podium and black-board lights. The top of the window must be ⅔ the depth of the room over the top of the desk, and there must never be a wall surface of more than 1. to 1.25 metres between two windows. The teachers desk or Katheder must be boarded to the ground, and must be on an elevation of prescribed dimensions. In Prussia the Kaiser's picture must be found in every school room. Wardrobe, books and umbrella stand are now often in the corridors, instead of in rooms for that end. Stairs must be 1.5 meter's wide and of stone or brick, and must be broken but not winding, fire-proof and well lighted. Ventilation is from over the windows to the opposite side, and by a system of large canals or tubes, for summer. The cost of heating is reckoned per cubic meter and equations showing the ratio of the heating surface to amount of heat required and intensity of heat on this surface are the bases of comparison. Heat is best from horizontal surfaces and air must not be too hot. Heating and ventilation must be separated. For the out-houses one seat for 100 boys and twice as many for girls is the rule. The ton system of

Berlin is commended. For a class of fifty the gymnastic room must be 9.5 x 15.7 meters. Drawing room, masters' residence, hall or aula are also prescribed with detail. Then follows descriptions of each class of school from one class village schools with one room up to gymnasia and technical schools.

Der Bau und die Innere Einrichtung von Schulgebäuden. von C. HINTRÄGER. Wien 1887. p. 87.

This manual, with 142 cuts, is written with especial reference to Austria. The author complains of contradictory principles that embarrass his profession of school architect. There is the wardrobe question, the question of isolation of sexes, that of seats, heating, ventilation, closets, etc. Moreover the interests and demands of doctors, architects, tax-payers, teachers and parents, are in some respects irreconcilable and make the presentation of school-house norms especially hard. No building has such formative effect on the body of the next generation. Much of the author's material is common to several such hand books. His treatment of seats and school-gardens is perhaps best. No seat can compel children to sit properly, but must of course admit much motion while favoring the best attitude. The doctors sometimes insists that every part of seat and desk must be movable and be adjusted to each child who should have a seat and desk of his own. To this the taxpayer objects. The teacher lays too much stress upon noiselessness, easy getting into and out of seats, and convenient visibility of as much of each child as possible. General desiderata are that seats and desks shall be solid and pleasing in form and color, made near by, if possible in the locality, easy to sit in, and favoring a proper position, adjustable as far as possible, free from dangerous corners and edges, or hinges and slides that might injure flesh or clothes, and easily cleaned. One or even two foot rests, horizontal or inclined, are often commended, but the entire sole must be supported. As examples of various systems now found in Germany we may instance the following. 1. The Prussian. The seat is joined to the desk behind. The desks have an inclination of 5 cm., the "distance" is 12 cm. and all are made in four sizes. 2. A Swedish in 12 sizes. Seat and desk in front are united by bottom thresholds joined by foot rests. On the back of the desk is an iron frame to support a copy stood on edge in drawing. 3. The Würtemberg desk is like 1 except that the back is more oblique and the foot board is double, viz: a flat near and an oblique further from the seat. 4. The J. Frey desk. The seat is joined to the desk as in 2, but at the great distance of 5 cm. and the back is a bar. 5. In the C. Lange pattern, desk and seat are separate and foot board movable back and forth, and the back is double and fitted to the lower spine and to shoulder-blades. 6. The Bavarian Seat seats four children and is in four numbers, the back being separate from the seat and being the front wall of the desk behind. 7. The Aargauer has a zero distance, desk and seat separate, and two back bars and a foot-board 8. Buhl and Linsmeyer; desk and seat united, and for two pupils, each with boxes between them on the seat; five sizes, distance=5 cm. negative. With only a board for desk the teacher can see more of the pupil. 9. French desk, with iron frame, book-box under desk, joined to seat, double or adjustable foot board, and desk with front and back mouldings. 10. Swedish-Danish form, very heavy desk and seat united, top of desk hinged and opens into book-box. Seat curved down a little, and a two barred back curves up. 11. Liebrecht pattern, iron frame, front half of desk hinges up and over to hold up book and serve as reading desk at angle of 20°. 12. Fahrner pattern. Desk-top opens, seat and back bar primitive, distance negative and foot board high. 13. Kaiser pattern, seat swings back about axis on floor and also about axis just below its nether surface, seat and desk joined and latticed floor for rest. 14. Kunze pattern; desk top slides back and forth, back and seats are designed to be a physiological fit, much used of late. 15. Olmutz plan; like 13, only the adjustment works with a spring instead of being fixed by a bolt, the back a vertical board fitted to the spine, and desk drawn out with a depression instead of a moulding as handle. 16. Lieckroth pattern, American iron frame, latticed seat which tips back, and desk tips forward. 17. Beyer pattern, seat slides back and forward so that in writing the distance is 5 cm. negative and in standing it is 14 cm. positive.

An ideal school garden should contain fruit trees and vegetables, beds for technical, economic, medicinal and trade plants, flowers, garden-house, dung-beds, water reservoir and bee-house, play ground and gymnastic field may be connected with it. In France especially the latter are often covered (preaux). Hedge makes the best enclosure. No country school especially should be without a garden. It must not be so completely shut in as to prevent interest of passers by. Where useful plants grow regularity and straight lines are preferred, otherwise curved lines and landscape style are preferable. Six interesting plans are given.

Schulbänke, Schultische und Stühle. Von V. PRAUSEST.

The author has interested himself in the school-seat problem for more than a quarter of a century. In his early efforts to drive out the monstrous seats in vogue in Austria he found school boards and carpenters conspired against him to support old traditions, and laughed at his plea that diseases of digestion, circulation and sex organs were caused by unphysiological seats, and that instruction was far more effective with easy seats. Everything should be fitted to the form of the body and the individual so far as possible. To those who object to backs he concedes that children should sit each day for a time without touching them to strengthen the spine. He concedes to Henry Barnard's paper the first initiative in 1854. A very voluminous literature upon the subject has since appeared in Germany, which is cited. It is impossible to construct a school seat that shall meet all requirements, for these are contradictory, and to construct those that combine most advantage and exclude most disadvantage would be so expensive as to be impractical. On the whole, the author prefers movable cane-seated chairs as cheaper, cleaner and admitting gymnastics in the school room.

Baukunde des Architecten. Berlin, 1884.

This voluminous production, containing nearly two thousand pages and as many cuts, is a convenient cyclopedia of architecture by many experts, and intended to cover every variety of structure from pig-pens and cattle-stalls to churches and universities. Long sections each are devoted to school-houses, of each grade, technological buildings, hospitals, clinics, alms-houses, museums of various kinds, theaters, prisons, baths, barricks, work-houses, etc.

Le Lycée Janson de Sailly.

Till recent years the Paris Lycées have been rather centralized in the academic quarter on the left bank of the Seine. The Condorcet and the Charlemagne, both extern schools, were the only exceptions. The Janson de Sailly was finished in 1884 in a new and populous quarter of Paris, rue de la Pompe, and architecturally is the best of all Paris Lycées. It occupies with its grounds 34,000 square meters. The total cost was ten million francs, of which two and one-half were a bequest by the donor, whose name it bears, and the rest was given by the State. It accommodates 800 pupils, of which 450 are interns. Besides the court of honor behind the chief façade and the two courts for military exercises, are four large courts for small, large and intermediate pupils respectively, and each surrounded by the buildings of the school. There is also a separate building and court for very small pupils and four large covered courts for rainy days.

Lycée de Laon.

The instructions of the minister left here much to the initiation of the architect. The modern precept in France that the school should be the finest building in the commune was not to be pushed to the extreme, but the architect could impress the stamp of his personality upon it. The Lycée was built beside the magnificent normal school by the same architect, G. Ermant, at a cost of 1,700,000 francs for 350 pupils, which was a little less than 5,000 francs per pupil. Besides the usual entrance court of honor were five other courts and a large field for military exercises. As is usual, the courts are far larger relatively to the building than is usual in German gymnasia, and the buildings are in relatively long, low and narrow rows surrounding the courts, which are not merely for light and air, but are the chief play-grounds of the students. The main facade is the only architectural unity of a modern French Lycée, save of course the heating.

L'Ecole Monge.

This intermediate school, 141-5 rue Malesherbes, Paris, was founded by M. Godart, 1869, to improve methods of education. It was not finished till 1881, and cost $500,000, by the architect DeGorge. It is two full stories, built around three large play grounds, with a long backward projection and an infirmary, and contains closets, bath rooms, gymnasia, covered courts, kitchen, dining rooms, parlors, etc., all on the most modern French style, and when it was completed, was perhaps architecturally the most individual and novel school in France, with a remarkable open second court for the first and second divisions. The third court of the classical division is unusually large and well shaded.

Collège Sanite-Barbe.

Founded in 1460, this college has had a noble history, and has always been progressive. Its alumnial association, founded in 1820, numbers about 5,000 members. Its new buildings, begun in 1882, represent the best school art in France. Its chief façade is on the rue Valette, and the new buildings cover 5,600 square meters. Its seats, benches, bath rooms and dormitories, gymnasium, infirmary, kitchen and dining rooms are all of the most approved fashion. Its drawing room and its ground court are very impressive. E. Lheureux, architect.

City of London School.

This new school on the Thames embankment is in Italian renaissance style, and its front of 136 feet is entirely faced with stone. The great hall extends entirely across the front, while the long back ell is devoted to class rooms on either side an hall. The play grounds cover nearly four times as much space as the building. First on side and rear are covered grounds for wet weather. Across a narrow play ground, which separates the court from the wall of the next building, are erected five fine courts, two of which are covered, and a gymnasium, and back of all comes the large play ground.

Le Génie Civil prints on five large double sheets, the plans of M. Deufer, for the reconstruction of the *Ecole Centrale des Arts et Manufactures*, on the grounds formerly occupied by the old market Saint-Martin, on rue Montgolfier. It is built round a vast open court, surrounded by a covered promenade, and has three stories. The refectory and large laboratories are on the *rez de chauseé.* The dormitories, cabinets, amphitheater of the pupils of the first year are on the first floor, those for the second year on the second floor, and those on the third for the third year pupils.

Die Universität Freiburg.

This quarto is an *edition de luxe*, giving the history of the university in all its departments during the government of the Grand Duke Friederich, 1852-81, is copiously illustrated, and has many elaborate tables. Five new institutes have been built, and five others founded within this period. There are five seminaries and five societies connected with the university. The budget of the university is now 324,037 marks, and the number of students 757. The fourth centenary of the university was celebrated in 1857.

Das Physiologisch-Chemische Institut Tübingen.

Perhaps nowhere was the tradition that all intending doctors must do practical work in chemistry so early and strongly developed as in Tübingen, owing chiefly to Schlossberger and Hoppe-Seyler. This institute was the only one of its kind in Germany when it was built, save only that at Strassburg. Schlossberger was a pupil of Liebig and Rose, and gave the first lectures on phsiological chemistry in Germany in 1845 in Tübingen. The new institute here finished in 1889 is described by its professor, G. Hüfner. It is small, but well adapted to its work. The recent installation of physiological chemistry in the Sheffield course of New Haven, under a pupil of Kühne, is a promising new departure in this country.

Description of the Chemical Laboratories at the Owens College, by H. E. ROSCOE, 1878.

The plans of the architect, A. Waterhouse, are photographed, as are tables, hoods, etc. There are two large parallel laboratories and the lecture theater is in a building by itself, connected with the laboratory by a passage.

The Chemical Laboratories of the Universities of Bonn and Berlin. A. W. HOFFMAN, pp. 72, illustrated.

This quarto was prepared by the author (who is now professor of chemistry in Berlin, and who built both laboratories), in English, and by request of the British ambassador. The author began his chemical career in London, and has a good command of the language, but unfortunately the report was required when the building was in a too incomplete stage to permit the details which many will desire to know. Grants, sites, plans, approvals and many intricate questions arising from the participation of the Academy of Sciences of Berlin in the laboratory of that place, were very slowly settled, but these two magnificent structures bears a tribute of recognition of the influence of chemistry in the modern world, not without its effect upon other departments of physical science, which have been not less productive of useful results. It was these buildings that first brought the great influence and importance of chemistry to the knowledge of other countries, so that they mark an important step in the advancement of the science. Vast as was the Bonn institution, it was intended for but 60 students, including (a) beginners, (b) advanced students, and (c) young chemists. Both agree in having the large auditorium in the middle flanked and lighted by courts on either side.

Die Chemischen Laboratorien der Technischen Hochschule zu Aachen; pp. 62, illustrated.

This is a side building to the magnificent new technological school at Aix la Chapelle, but is itself among the best in Enrope. It is built about two large courts, with the large auditorium in a front projection and boiler rooms in a separate structure behind, and at a total cost of 1,250,000 marks. The inorganic laboratory was larger than the organic, as very many students were qualifying for mining and metallurgy.

Die chemischen Laboratorien der Eidgenössischen Polytechnikums in Zürich. 1889.

This elegant quarto abounds in photographs and plans of a building costing with equipment 1,700,000 francs, finished in 1886, and constructed chiefly from the plans of Professors V. Meyer and G. Lunge. It is a three story building, 86x19 meters, four one story wings and two courts, and is in many ways a model building.

Die Eidgenössische Polytechnische Schule in Zürich. 1889, pp. 94.

This quarto, copiously illustrated, was prepared for the Paris exposition, and contains a history of the school, dating back to 1848, its statutes. account of departments, its 113 instructors of all grades, of which 49 are paid and titular professors, and its 277 students. Besides the large building, there is an observatory, an agricultural and forestry building, and one each for chemistry and physics. A student must be 18 to enter any of the six courses, and the government has provided stipends and aids of various sorts. The annual income is 679,000 francs, of which 102,000 is from students. Very emphatic is the experience of this grand institution, p. 56, against uniting mechanical labor and study in the same course.

Literature on Recent University Buildings.

The following list comprises all works that are both recent and important known to the writer. The figures on the right denote the price in marks.

Aachen. Technische Hoschschule. Deutsche Bauzeitung, 1880, S. 31. m. 1. Taf.	12
Zeitschrift fur Bauwesen, 1871, S. 5, Taf. 1—10^a	26
Aberystwith. University College of Wales. The Architect, 1872, I, S. 240, m. 1. Taf.	24
Allahabad. Mahomedan University. The Architect, 1873, I, S. 304, m. 1. Taf.	24
The Architect, 1875, I, S. 276, m. 1. Taf.	24
Basel. Pathologische Anstalt. Die Eisenbahn, 1881, I, S. 133, m. 6 Holzsch.	20
Belford. Academy. The Architect, 1879, I. S. 145, m. 1, Taf.	24
Berlin. Technische Hochschule. Centralbl d. Bauvew, 1883, S. 403, 441.	12
Berlin. Bau-Academie. Deutsche Bauzeitung, 1876, S. 21. 73. 81. 91. 99.	12
Deutsche Bauzeitung, 1887, S. 31. 41.	12
Berlin. Universität, Klinische Anstalten. Deutsche Bauzeitung, 1882, S. 219, 255. m. Holzsch.	12
Berlin. Universität; Frauenklinik. Centralbl d. Bauvew, 1882, S. 385. m. 3 Holzsch.	12
Berlin. Universität, Geburtshilf Gynekol, Klinik. Deutsche Bauzeitung, 1880, S. 303. 306. 319. m. Holzsch.	12
Bonn. Universität, Klinische Neubauten. Centralbl d. Bauverw, 1883, S. 313. 323. 329. 333. 343. 355. m. Holzsch. u. 1. Taf.	12
Bordeaux. Faculté de droit. Revue générale de l'Architecture, 1874, S. 50. Taf. 14-15.	40
Boston. Latein. u. engl. Hochschule. Centralbl d. Bauvew, 1883, S. 86. m. 2. Holzsch.	12
Bradford. Technical school. The Building News, 1880, I, S. 714, m. 1. Taf.	24
Braunschweig. Polytechnikum. Deutsche Bauzeitung, 1877, S. 423. m. 2. Holzsch.	12
Bristol. University college. The Architect, 1879, I, S. 281. m. 1. Taf.	24

Budapest. Universität Avillon für Chirurgie. Bauzeitung für Ungarn, 1877, S. 341. 405. m. 2. Taf. . . . .
Budapest. Universität, Klinik. Bauzeitung für Ungarn, 1880, S. 401. m. 1. Taf. . . . .
Budapest. Universität, Physiol. Institut. Allgem. Bauzeitung, 1880, S. 54. Taf. 39-41. 40
Budapest. Königl. u. Josephs, Polytechnikum. Bauzeitung für Ungarn, 1882, S. 191. 213. m. 3. Taf. . . . .
Cambridge. University. The Building News, 1879, I, S. 506. m. 1. Taf. 24
Dresden. Polytechnikum. Deutsche Bauzeitung, 1874, S. 194. 201. m. 1. Taf. 12
Deutsche Bauzeitung, 1875, S. 463. m. 3 Holzsch. 12
Edinburgh. University. The Architect, 1877, I, S. 384. m. 1. Taf. 24
The Architect, 1881, I, S. 57. m. 2. Taf. 24
The Building News, 1879, I, S. 720. m. 1. Taf. 24
Göttingen. Anatomiegebaude. Centralbl d. Bauverw, 1882, S. 189. m. 2. Holzsch. 12
Grenoble. Facultés. Encyclopédie d'Architecture, 1882, S. 89. Taf. 774. 783. 784. 40
Halle, A.-S. Universität Medicin, Lehr. Institute. Centralbl d. Bauverw, 1881, S. 150. 158. 166. 177. 208. 226. 331. 341. m. 14 Holzsch. 12
Hannover. Technische Hochschule. (Umbau Des Welfen Schlosses). Deutsche Bauzeitung, 1879, S. 411. m. Holzsch. . . 12
Zeitschrift d. Architect und Ingenieur Ver, zu Hannover, 1879, S. 349. Taf. 779-783. 24
Zeitschrift d. Architect und Ingenieur Ver, zu Hannover, 1880, S. 19. Taf. 797-799. 24
Hartford. High School. The Building News, 1883, II, S. 14. m. 1. Taf. 24
Heidelberg. Universität, Physiolog. Institut. Allgem. Bauzeitung, 1883, S. 31. Taf. 22-25. 40
India. Mayo College, Ajmeer. The Building News, 1879, I, S. 198. m. 1. Taf. 24
Ithaca. Cornell University. The Building News, 1875, I, S. 372. m. 1. Taf. 24
Kiel. Universitätsgebäude. Deutsche Bauzeitung, 1877, S. 177. m. 1. Taf. 12
Königsberg. Universität. Nouvelles annales de la construction, 1872, S. 6. 35. Taf. 1.2-17. . . . . 17 35
Lemberg. Technische Hochschule. Allgem. Bauzeitung, 1881, S. 95. Taf. 70-76. 40
Lemoine. Ecole polytechnique. (Agrandissement). Encyclopédie d'Architecture, 1882, Taf. 798. 823. 827-829. 842. . . . 40
Encyclopédie d'Architecture, 1883, Sl. Taf. 846. 847. 852. . 40
Leyden. University. The Builder, 1878, S. 915. m. 1. Taf. . . . 24
London. University College. The Architect, 1870, I, S. 236. m. 1. Taf. 24
The Builder, 1881, I, S. 81. m. 1. Taf. 24
The Building News, 1880, II, S. 298. m. 1. Taf. 24
The Building News, 1881, I, S. 706. m. 1. Taf. 24
London. South Kensington Science Schools. The Builder, 1871, S. 689. m. 1. Taf. 24
Lund. University Buildings. The Builder, 1883, I, S. 42. 74. Sweden, m. 2. Taf. 24
Marburg. Universität. The Builder, 1879, S. 1078. m. 1. Taf. . 24

München. Akademie der Künste. Deutsche Bauzeitung, 1883, S. 29. m. 1. Taf.	12
Zeitschrift für Baukunde, 1878, S. 47. Taf. 1-4. 12-13.	24
Zeitschrift für Baukunde, 1881, S. 8. Taf. 3-4.	24
München. Chemisch Laboratorium der Akademie. Zeitschrift für Baukunde, 1880, S. I. Taf. 1-5.	24
München. Patholog. Institut. Zeitschrift d. Bair. Architekt and Ingenieur Vereins, 1875, S. 21. Taf. 4-6.	10
München. Politechnikum. Deutsche Bauzeitung, 1870, S. 233. 247, 2. Taf.	12
Allgem Bauzeitung. 1872, S. 22. Taf. 5-15.	39
Nottingham. Academic Buildings. The Architect, 1877, I, S. 108. 144. 178. m. 6. Taf.	24
Nottingham. University College. The Builder, 1881, II, S. 482. m. 2. Taf.	24
The Architect, 1879, II, S. 257. m. 1. Taf.	24
Oxford. New College. The Builder, 1872, S. 829. m. 1. Taf.	24
Oxford. Examination School. The Building News, 1876, II, S. 622. m. 1. Taf.	24
Paris. École des Beaux Arts. Revue générale de l'Architecture, 1883, S. 65. Taf. 15-22.	40
Paris. High School for Pharmacy. The Builder, 1882, II, S. 682. m. 1. Taf.	24
Paris. La Sorbonne (Reconstruction et Agrandissement). Encyclopédie d'Architecture, 1880, S. 28. Taf. 872-874.	40
Proskau. Pflanzen-Physiolog. Versuchs, Anstalt. Zeitschrift f. Bauwesen, 1874, S. 291. Taf. 50-52.	30
Rostock. Universität. Deutsche Bauzeitung, 1872, S. 414. m. 5. Holzsch. u. 1. Taf.	12
Schulpforta. Aulagebäude. Zeitschrift für Bauwesen, 1883, S. 11. Taf. 14-16.	30
Stockholm. Technical High School. The Builder, 1878, S. 240. m. 1. Taf.	24
Strassburg. Universität. Deutsche Bauzeitung, 1878, S. 487. 497. 501. 507. m. Holzsch.	12
Centralbl der Bauvew, 1881; S. 58. 87. m. Holzsch.	12
Surrey. Holloway College. The Building News, 1877, II, S. 614. m. 1. Taf.	24
Vienna. Akademie der bildenden Künste. Allgem. Bauzeitung, 1876, S. II. Taf. 1-9.	40
Allgem. Bauzeitung, 1879, S. 30. 92. Taf. 27-28.	40
Vienna. Universität. Wochenschrift d. Oesterreich, Ingenieur, u. Architekt, Vereins, 1878, S. 148. 151. 155.	15
Vienna. Universität Chemisches Institut. Allgem. Bauzeitung, 1874, S- 44. Taf. 51-60.	39
Winterthur. Technikum. Die Eisenbahn, 1878, II, S. 131. 147. 173. m. 4. Holzsch.	20
Winterthur. Technikum Chemiegebäude. Die Eisenbahn, 1879, I, S. 44. m. 3. Holzs.	20
Zürich. Polytechnikum. Deutsche Bauzeitung, 1880, S. 109, m. 2. Holzs.	

II.—EDUCATION IN GREECE.

L'Education Athénienne au 5me et au 4me Siècle avant J.-C., par **Paul Gérard**. Ouvrage couronné par l'Académie des inscriptions et belles-lettres, avec 30 figures dans le texte. Paris, 1889. pp. 340.

This is a complete and exhaustive account of the education of Athenian youth from birth onward. The evidence afforded by all sources of information has been carefully examined by a scholar who had no theory to prove or preconceived notions to verify. The works of archeologists of all nations have been freely used and definitely named as authorities. Copious notes refer the reader to the sources of knowledge and often quote in the original the particular phrases and sentences from which conclusions have been drawn. The illustrations from vase painting and the explanations accompanying them show in an admirable manner what may, and what may not be safely deduced from the remains of ancient art. In the first part the relation of Athenian education to the State is discussed. In the second the life of the child is traced. The parents, the nurse, the songs, stories and sports of the nursery, the instruction given by the pedagogue, the grammaticus, the cithariste, the pedotribe, and the education outside the school, all receive full treatment. Although the condition of things in the 5th and 4th centuries is what is especially treated, the development of customs and institutions from earlier times is not neglected. The ephebic college, for instance, underwent great changes, and the 4th century which saw the rise of philosophy found many things necessary which had not previously received attention. Drawing, philology, and the sciences were taught at this period though the precise time of their introduction can not be determined. The social standing of schoolmasters, their relations to their pupils, and the methods of instruction together with a full account of Isocrates and his teaching throw much light not only on education but on Athenian life in general. The author strives to show in the case of particular studies and in the different stages of progress what end was sought and how far instruction continued to be given when the end had became little more than a tradition. A striking fact is the slight connection between the State and the school, especially in view of the Greek idea that the prosperity of the State was the end of education. In the classical age of Athens there existed a law making education compulsory, but it did not define education, provide for schools nor prescribe programmes. Schools were established by individuals, and attendance was voluntary, yet there were very few illiterates. The child was no doubt harshly treated by the master if he did not do well what he was required to do, but it was expected that he would make slow progress and nothing was demanded of him but what he did in the presence of the teacher. In earlier times the ephebic college was a military school and every youth received training there from his eighteenth to his twentieth year, but this was certainly not the case in the 4th century. Literary education consisted chiefly in the study of the poets. Homer was of course the chief, though Hesiod was perhaps equally used, and the lyric poets found great favor. Whether a poem should be learned entire or only in parts was a question then as now, but since teachers were not hampered by State programmes there was no established custom. Books of selections certainly existed and the use of them accords with the end sought, which was moral rather than literary. No stress was laid upon the beauties of the composition though great pains was taken with pronunciation. The cultivation of heroism, fortitude and love of country was the object aimed at by making the pupil repeat with just and appropriate emphasis the lines dictated by the master. The following paragraphs are from the concluding chapter.

"Liberty then forms the basis of Athenian education. The State does not take the rôle of master until it is necessary to make the young man a soldier. At eighteen the youth belongs to her; it is she who then instructs him and prepares him to defend the territory, the temples, the tombs, the institutions, the customs, all the sacred things with constitute the country and of which he has the care. The young man is not at liberty to refuse to respond to her call; he must be made sensible under her direction of his military duties which are the first and the most holy of his civic obligations. But the State until that time remains indifferent to his studies, and this indifference is to the honor of Athens; her citizens had so passionate a desire for instruction that no law needed to intervene and promise privileges and recompense to the young in order to induce them to cultivate their minds, they sought to adorn themselves and develope themselves without constraint; the fathers went beyond the timid demands of the legislators; they went far beyond the minimum of knowledge that the antique prescriptions obliged them to give to their children. And we are treated to the strange spectacle of a city which regards knowledge as the chief good, yet in which the government does not interest itself in scientific culture, so great is the confidence in the public zeal for intellectual pursuits.

"If now we consider the manner in which the Athenian youth was instructed in the schools and gymnasiums it will be seen that no system was wiser or better adapted to the nature of young persons. We will not dwell upon the happy equilibrium which the Athenians knew how to maintain between the exercises of the body and those of the mind; that admirable harmony was not peculiar to them; it is found elsewhere and is the very principle on which Greek education is founded. The body in the eyes of the Greeks has its rights as well as the soul, and a pedagogy which counts it for nothing would have been to them as strange as baleful. But what distinguishes Athens is the moderation which characterizes the tasks imposed on children. If the young Athenian studies the poets it is not to load his memory without discernment but to fertilize it with what is best; if he learns geometry and astronomy it is not to become an astronomer or a mathematician but to gain from a transient practice of these sciences the qualities that can be drawn from them; if he sings or plays the flute and lyre it is not for the purpose of shining in competition with others but to increase his intelligence and power, or, on occasion, to procure for himself agreable recreation; if he devotes himself with ardor to the contests of the palestra it is not to gain the skill of an athlete but to develope his natural strength and acquire that vigorous grace which is the ornament and luxury of health. Education in everything avoided extremes; it strove rather to produce harmonious wholes than astonishing but narrow specialties; its end was to make men, not prodigies, and in this design appears the high idea that it has of its duties.

"I have said that it accords marvellously with the dispositions and the needs of youth. Of all the peoples of antiquity the Athenians best understood the young; none loved them better, gave them more holidays, was more touched by their savagery, their passions, that impetuosity of desire which is the fault and the charm of their age, with that impatience of all restraint which makes them revolt against prudence, and as Bossuet has beautifully said, 'makes them ashamed of nothing but moderation and modesty.' They were applauded at the public celebrations; their valor in combat was admired, and their heroic deaths were glorified in the poetic and touching images of eloquence. Nowhere were they regarded with more tender sympathy nor with more indulgence for their excesses. The history of Athens from beginning to end is nothing but a long and splendid triumph of youth. With these sentiments the Athenians could not subject the child to the severe discipline elsewhere imposed on him and neither in studies nor conduct did they demand of him an obedience that they judged incompatible with his character. For this reason their system of education seems to us to be characterized by great gentleness. The pupil worked, but he worked freely; his masters contented themselves with pointing out what he should do; it belonged to him to practice himself in it. Neither the palestra nor the school was for him a sombre prison where he was confined to accomplish, in a given time, a prescribed task; beyond the lessons, which were short, he studied when he pleased, and as he pleased, mingling study with play and relaxation. Not being obliged to complete an infinitely extended circle of sciences, learning only what he was able to learn, varying his work by passing from literature to gymnastics, and from music to riding, he escaped fatigue and ennui. He was not forbidden to mingle in the conversations of grave persons but on the contrary followed them with interest and took part in them, adventuring timid and charmed into the field of philosophy where as a young man he will walk with a step so sure and so triumphant. He lived in the delights of poetry and science without being confined by a programme or hurried towards a precise end, without, in a word, having work offered to him as an austere duty. Happy time, when humanity is not yet crushed under the weight of its inventions and its history, and when it is possible to be instructed without renouncing all the pleasures which give value to life."

But while M. Gérard finds this liberty which is the basis of Athenian education so admirable, he does not forget that it was attacked with more or less seriousness by the most renowned philosophers and poets of Greece itself. Aristotle, Plato and Xenophon would have destroyed it and given the State supremacy in all things pertaining to the instruction of youth, while the comic poets represent the morals of young men in a way intended to reflect strongly on the manner of their bringing up. Of Aristophanes whom he calls "the least serious of these pessimists," M. Gérard says, "His criticisms must not be taken literally. Without doubt in the second half of the 5th century manners underwent a great change, but there is nothing to prove that the change was a decline. The virtues, the lack of which the poet deplores in his own time, he attributes quite arbitrarily to the youth of an earlier age, and the young men whom Plato shows us listening to Socrates, Lysias and Menexenes are indisputable witnesses is to the fact that all was not corruption and perversity. As to philosophy, we can scarcely expect it to do otherwise than find independence bad. As, in its eyes, the end of government is happiness, and as happiness is impossible without virtue, it is self evident that the State must demand of its citizens the virtue necessary to its prosperity, and in order to secure its acquisition and practice ought itself to teach it. Neither Plato nor Aristotle took account of the benefits of liberty. Assured, both of them, of the excellence of their ethics and not being able to ask that religion deprived of authority should make them prevail, they confided this care to the State, which alone was armed with power strong enough to rule the conscience." Plato's objections to the current poetry on the ground of its being fictitious and therefore immoral are set aside by statements which those whose pedagogy is based on observation of the child fully admit. "The mind of the child always active, creates innocent chimeras amidst which he lives and entertains himself. Incapable of understanding the reality, he conceives and likes only the fictitious, even when he but half believes it. It is necessary to satisfy this need of the ideal which is the principle of a fruitful activity." "The fault of Athenian education is not that it was immoral nor detached from obligation to the State, but that it made too little account of the family. The father and the mother had too little part in the culture of the child." In style and manner, as well as in contents, the book is thoroughly admirable and pleasing. E. M. H.

L'Instruction Publique chez les Grecs, par G. CHASSIOTIS, Paris, 1881. pp. 550.

This comprehensive volume falls into two parts; the first an history of education in Greece since the taking of Constantinople by the Turks in 1452, and the second an exposition of the present educational institutions of the country. The author is a former head of the Lyceé at Péra, an academician and an ardent philhellene. He was incited by the comprehensive plan of C. Hippeau who began in 1870 an exposition of the systems of public instruction in different countries of Europe, and had already published seven volumes on as many countries when M. Chassiotis wrote. The comparative study of the educational systems of different lands is the point of departure. After the fall of Constantinople the consolation of the pleiades of savants was the guardianship of ancient manuscripts, and now the language and school traditions, together with the patriarchate are the hope of Greece. Between 1453 and 1821 trivial schools were largely devoted to the psalter, *triodia* and *amthologia* from Scripture. Holding a tablet or *pinakidia* after invoking St. Croix, the letters *alpha* and *omega* were shouted and written, then *beta* and *psi*, etc. In class reading each pupil reads a word or more in turn or at call. Punishments were varied and severe, the *phalangas*, or feet-holder for bastennado being most severe. When his book was finished a village fête was often given the pupils. The mutual method of Lancaster was early introduced. College and gymnasial education was represented chiefly by isolated scholars who drew about them a circle of disciples. Some taught medicine, some ancient manuscripts, etc. Especially *Mavrocordatos* taught Greek and philosophy and founded the first *phrontisterion* at Constantinople. He gathered disciples whom he inspired to found schools in various towns, and collected manuscripts of which he made them custodians. Near the beginning of this century there was great activity. More than 3,000 works or translations were printed in Greek, and many schools acquired wide repute at Janina, Salonique, Adrianople, Mt. Athos, Philippopolis, etc., with the great national school at Constantinople the center of all, to each of which schools, 14 in all, a chapter is given. The latter is a bizantine relic still in existence, (visited by the present writer,) and ruled by a long succession of great *logothetes*, and in 1825 transferred to its present site at Phanari. The "psychagogy" of these schools was simple and elementary, comprising composition, paraphrase, mathematics, philosophy and the theology of the Greek synod, with much attention to the great Greek authors, especially Homer. The great enemy of the human race, said the great Neophyte Vamcas, hates colleges above all. Most wrote and spoke ancient Greek with facility and exactness, which was the official language of the colleges, but later the partisans of the vulgar Greek gained ground. Each student must be taken to a point where he can instruct himself without the aid of a professor. These colleges conserved the traditions whence Greek regeneration proceeded in 1821.

The first and chief care of the Greeks as a free people was to provide for public instruction in the convention of 1822, and a normal school was founded at Argos. An academy of savants was established, and central schools for mutual instruction in each province, and many new schools were established in all parts and in the islands. The hope of Greece, said the orators, lies in the education of the children. Capodistrias, the chief patron of education, sent deputies to study the systems of other lands, established the splendid *orphanotrophe* for the many vagabond children, which he designed to be the pèpenière of Lancastrian schools. A military school was established at Nauplie. an ecclesiastical seminary at Poros, and an agricultural school at Tirynthe. In 1830 the government was spending nearly 50,000 dollars per year for education and had much private assistance, when the assassination of Capodistrias in 1831 broke up the new organization. The Ionian Academy, 1823-64, endowed by Lord Guilford inaugurated with great pomp the professors in old Greek dress, and had over 200 students. After Guilford's death, 1827, it declined and government aid was gradually withdrawn. In 1833 under Prince Otho reconstructions were attempted and in 1837 the present university at Athens was founded. The legacies of many patriots have greatly aided the work of the government, especially the construction of the magnificent academy at Athens by Sina, one of the most beautiful of all modern buildings, of pentelican marble and costing nearly one million dollars. The *Arsakion* for girls, the *Barbakion* for boys, and the polytechnic school are all private gifts.

Greece is now divided into 13 departments, 59 districts and 366 communes, under prefects, sub-prefects and mayors respectively. The last only are elected. All these officers must inspect schools. The minister of education nominates all teachers. His bureau has three departments, primary, secondary and higher and archeology. Secondary and higher instruction is given by the state. The communes always participate with the state in the control of the lower schools. In the 3,961 villages in Greece there are but 1,035 primary schools for boys and 137 for girls, but there are 276 private schools. These are supported by the locality save that the government contributes 40,000 dollars. Mutual and simultaneous methods of instruction prevail. The entire population is now about 1,700,000, and there are about 80,000 children in school. The total annual expense for primary schools is about 300,000 dollars. The normal schools at Athens (1834), the Asarkion, named from a generous patriot, a model school, the *Tossitzion*, named from a generous lady, a teachers' association and museums do good work. Secondary education is represented by so-called three-class hellenic schools, the four-class gymnasia for which the former fit, and special schools of various classes and is entirely free. In both the stataric and cursory courses of Greek authors a remarkable amount of classic Greek is read, but there is too great adherence to German methods for pupils who inherit the language. It is held that it is impossible to learn living languages in these schools. There are 189 of them with nearly 12,000 pupils, 520 professors and they cost about one million francs per year. There are four ecclesiastical schools and one superior school. The university is on the German plan. The philosophic faculty has three sections, philosophy, natural science and mathematics. Its philological seminary is called phrontisterion, its rector a prytanis, its four deans kosmetors. Many learned societies or syllogues are established, and there are prizes for dramatic, lyric and epic poems, and for various scientific and literary merits. The archeological museum society and its journal shows great activity. The work closes with an extended section on education among the Greeks in Turkish provinces and the Greek colonies, and with four admirable maps and is well indexed and abounds in tables throughout. The ideal of the scores of benevolent patriots is the restoration of the prestige of ancient Greece on the lines of modern sciences developing at the same time all the precious resources of the rich past. In Italy, France, Russia, England, Austria, Egypt, and in other European countries Greek schools are found.

III.—ART EDUCATION.

The Education of the Artist, by E. CHESNEAU. pp. 326.

Art is in decadence in all Europe save in England. Artists are uneducated. Art has become cosmopolitan and industrial. Individuality and national schools are gone. There is a sad severance between art and the people. It appeals only to the connoisseur and the masses are not reached. Especially now that the masses are initiated into intellectual, political and social life, art must also recon with this great fact. Art now derives its inspiration from the conventional streams of good taste, and not from the fount of emotion, thought, feeling. There are now three types: vis., academic, or traditional, foreign to the needs of to-day; the pursuit of small success at any price, truckling to the buyer with eccentricity, refinement of execution; reproduction, glorifying small and low things by mere reproductions. Thus by the many art is cast out like the barren fig tree cursed by the Lord. There is no absolute beauty. Tradition is degraded to routine. Talent and genius can create not only masterpieces but new rules as noble and valid as any in antiquity or in any great art period. The end of art is the interpretation of the soul of man, with its emotions, feelings, sorrows, joys, doubts, passions, enthusiasms, loves, hates,—the soul in its entirety with no limitations. The soul changes from age to age, and its movement is not circular but progressive. Christian immortality makes the individual rise above the community in value. Truth and nature are the only unfailing fount, and the fixed idea of traditional beauty kept alive by professors is intolerant of the fact that every nation and even village has its own type. Artists want to be taken in tow by the two colossal, crushing minds of Phidias and Raphael. Every province, family, man, has his type of unconsciously stored impressions like a forgotten silo, scorned for the very reason it should be prized, because it is their own. Trust yourself, and if your eyes droop a moment before tradition or society you are lost. Self-revelation is the one virtue and its omission the one sin of the artist. No man can be a great artist without a good general education, and no one to-day has a good general education without art, but remains incomplete. Parents have lost their educational instincts by sending their children to school to be trained by others. The study of original decorative designs in young boys convinced Chesneau that most lads have germs of originality that our forms of training sterilize. We have talent but know not how to train it. First of all we must develop special individual gifts. When one sees his vocation general education is done. The cultivated and even middle classes in France furnish few recruits to art. The more special the gifts the earlier they may be detected. The *Union Central des Beaux-Arts Appliqués à l'Industrie* and the *Musée des Arts Décoratifs*, the tendency to teach general principles of economics, agriculture and manufacture show the need of widening the perview of the artist. So in another way did the formation of a class of decorative arts in the *Ecole des Beaux-Arts*, a class for orchestral playing in the Conservatory, and the courses of history, applied sciences, archeology at the *Beaux-Arts*. These have not been very successful, and the great speculation in works of art, and the eagerness of Americans to acquire them since 1870 has enriched but not elevated art. The government requires higher service of its employes than is required of artists, and the military law at least suggests an aversion to higher education by the government. Religious art lacks earnestness and sincerity. Heroic art now represents men as agents of fate defending a great cause with no thought of a future life. The nude, the ideal of a young artist, is past save in decorative sculpture and architecture where "stone dolls" are permissible. Historic art must be magnified and represent our protean nature under its distant mask. Art must not be too definite or too copious in artistic details. Portraits are a blight on our exhibitions. They have become only a way of making money, and spoil an artist. Ethnographic painting must not be merely graphic, still less photographic. There is no hard and fast line between utility and high art. Manufacturers complain of desertions among their decorators who are fired with ambition for the *Prix de Rome*. As ornament precedes dress, so applied and industrial art is only a later branch of pure art and should never be separated from it. Decorative art is now hybrid and barren because high art is not the great and vigorous source of supply.

Elementary Art Teaching, by E. K. TAYLOR. pp. 166.

This manual contains over 600 diagrams and illustrations, and is a guide for teacher and learner from infant school work to drawing from nature and design, by the head master of the Birmingham school of art. Begin with material that offers least mechanical resistance. Observance of this rule would save a waste amounting to a fabulous sum in England. Use the idiosyncrasies, the likes and dislikes of boys to the utmost. Do all possible by collective teaching on the blackboard, and then attend to individuals. Never show or refer to absolute failures. Enter into the mind of the student, without which all teaching will fail. Point out and dwell on good points as much as on errors. Work on a large scale from the shoulder at first without bending the back. All can draw as all can read and write. Classify children for drawing independently of other subjects, if necessary. Drawing and its cognates should occupy one-half of the time of infant schools, and reading and writing should be linked with it. Everything should be at first flat and diagramatic. First cardboards of geometric figures, letters, figures, etc., are laid on the slate and the pencil is run around them; then some outlines are filled in. Graded work and not examination cram should be the rule. The syllabus and code should be regarded as giving only outlines to be filled in for each standard, and not as merely defining examination material. Always keep slate or paper parellel with the top of the page. Squared paper is a valuable aid at first. Memory drawing should be only of the previous lesson. Allow no india rubber, and no lining in. Insist on indicating the position of ends of a line before it is drawn. The teacher should always precede and say "come" and not "go," and in copying main proportions, lines should be done first and the copy should not proceed bit by bit. Color blindness can be cured by education. In drawing the face, children make the mouth too low, and the features too large for the head, and tend to reproduce their own features in every copy, e. g., a boy with a large chin will make the chin of the Venus de Milo too large. Geometry for art students may excite the ridicule of mathematicians, but it is very important for art.

French reports on Art Education.

In 1885, Marius Vachon began to publish the reports to the French government of his official inspection of the art and industrial schools in Europe. The fifth and last large quarto volume has lately appeared. Nearly every country in Europe was visited, and 110 schools, 40 museums and 14 large associations are reported on with detail. From material so rich and voluminous we can here only state the general lessons. Everywhere a great movement, with remarkable economic phenomena, is apparent. As commerce and inter-communication have broken down social and political divisions, and the world has become one great economic State, with one market, each particular land has been forced to compete on lines of the artistic value of their finished products. Each nation has thus gone back to its past. Erudition has revived traditions and exhumed hidden treasures, and a national artistic renaissance, Antæus-wise, has been manifest. Each land has sought a monopoly against its competitors by recurrence with patriotic zest to national and even local antiquities.

Thus industry has taken on at once an artistic and a political character and importance unknown before. Italy, Austria, Russia and Germany are now in the midst of an effort which absorbs most of their energies to advance their business interests, and have realized that art is the chief means by which the value of industrial products is increased, and foreign markets held and enlarged. Statesmen see that in the present silent warfare of competition even national independence is at stake, and are ambitious of economic dominion. Russia is excluding

French products and multiplying schools of industrial art. There art is religious and religion is a form of national politics. This determines her policy with the vast new races she is assimilating in the south and east. The expansion of her eastern trade is the dominant note in the policy of Austria. The war of 1870 renewed in this century the consequences of the revocation of the edict of Nantes. Thousands of Germans, long resident in France and skilled in all her applied arts, went home and diffused their taste and aptitudes, and in 1881, in inaugurating the Museum of Industrial Art at Berlin, the Crown Prince said: "We vanquished France in 1870 on the field of war. We must now conquer her upon the field of commerce and industry." The organization of schools, the building of museums in their form and their dates, and their personelle, which are dwelt upon in detail, show that in every European land France has led. Her authors, tastes, fashions, in nearly every line of work were dominant, but her supremacy is now in danger at nearly every point. Every cabinet, chamber of commerce, or congress, must now realize that to-day the organization of education in art and industry is a work of national defence, in no less degree than is the organization of a national army.

Art schools and museums now show everywhere traces of a new departure. The exploitation and imitation of the past is seen to have its limitation as a means of protection against the competition of the present. Death cannot engender life. The dream of novelty and originality is now not to copy, but to analyze and to find the secret of past grace and grandeur. This is found in nature, which now transforms the programs of art schools. Science is taught not in the abstract Platonic way of the schools, but as the basis of ornamentation. Each race will interpret nature in its own way, but will be no less completely regenerated. A new style is in process of evolution. Nature is thus reorganizing art to correspond more closely than before to the needs and ideas of the people, and henceforth to be a far more vital factor in their lives, morals and religion than it has ever been before.

Finally, there must now be constant and detailed comparison feature by feature of the art institutions of France with those of every other leading country. Thus she may profit by all their experience.

L'art chez l'enfant, Revue Philosophique. PAULHAN. 1889, XXVII, 597.

This is a review of *L'art et la poesee chez l'enfant*, by Bernard Pérez. Although several writers (e. g. Darwin, Taine, Preyer, Genzmer, Hartmann, Kussmaul, *et al*), have paid attention to the mental life of children, yet Pérez seems to be the only one that makes this his specialty. He has already published *Les trois premières annees de l'enfant*, *L'enfant de trois à sept ans* and *L'education morale dès le berceau*. Pérez's new book contains many interesting and instructing accounts of the first manifestations of æsthetical instincts. M. Paulhan has criticized some of them and has given others.

Notes on Children's Drawings.

From a number of collections of drawings by children kindly sent the writer, a few remarks occur. The first collection are drawings of several hundred figures in all, sent by Professor H. P. Bowditch, Dean of the Harvard medical school. These were made by a girl, and pasted in a scrap book in the order they were drawn, and the name given each picture by the child recorded under it. The first picture in the collection is labelled a "little beetle," and was drawn at the age of two years and ten months, and the last is a pen sketch of an evening dress reception, somewhat in the style of such cuts in *Punch*, made at the age of 15 years and three months. This girl had good natural talent and after school age received some instruction in drawing. Most are human figures. *Eyes*. These are round circles only at first. Later black dots gradually predominate, and then the dot and the circle is frequent. When eye-brows come in at the end of the fourth year the eye is only a dot. At four years and eight months the dot re-appears in the circle, where its position occasionally well represents the direction of the eyes. Lids first appear in a picture of a girl asleep and dead, and afterwards are represented by a second horizontal mark under the brows, but at first rarely occur with the circle. Lashes begin at about five, but only appear with eyes shut. Later all is reduced again to large black dots and brow. Pupil, iris, cornea, are rarely distinguished. They are often too far apart and only occasionally too near together, and if the head is tipped in any direction the displacement of the eyes is generally excessive. The *mouth* is at first a straight mark, too long, and later for a time too short. Its up curve is joy, its downward corners are pain and crying. It is nearly always nearer the nose than the chin, and not equidistant between them, as is often the case with children's drawings. A rose-bud dot mouth, a double curve doll mouth, and a chin dimple, have their period, but there is no open mouth or teeth. The *nose* appears later than eyes and mouth, first as a dot or a short horizontal mark. At nearly five years of age a line on one side ending in a brow came in, but soon vanished. Ears almost never appear, save in two cases with large earrings, but are covered up with hair. *Hands* are first knobs on the ends of arms, which are often drawn without them. Things depicted as held are drawn onto, or across the arms on the knob. At four years the knob bifurcated, representing perhaps thumb and fingers, and at nearly five, five fingers occasionally come in, but the number varies within wide limits. The hand is occasionally fairly well outlined at last. *Body*. In but very few pictures do legs proceed from the head, which is at first always drawn complete, as is the body (often in two sections divided at the waist), while limbs if represented by more than one mark each open onto the body. The body is never drawn first and the clothes drawn over it diaphanously. Great attention is lavished on dress, buttons, aprons, hat, flounces and scollops, cuffs, collars, ties, embroidery, shoe fastenings, dress patterns, later in color abounding. The pictures on the whole are mostly human figures, and of these most are little girls, and most remarkably, nearly all are in action. The best feature is the naturalness of the action, and the co-ordination between body and arms. Figures at rest are more awkward than those in action. Colors appear at Christmas at the age of nearly six, and are always mild and harmonious. Nothing is too hard. Coasting, croquet, school and nursery scenes, snow storms, sunset, shoe-store, stealing, illustration of children's tales, and many scenes from the child's daily life, often illustrated by original poems and descriptions. There are silhouettes cut from black paper, real beads and gilt paper pasted on, drawings aided by embroidery, and most curious of all, many pictures that seem decidedly Chinese; others that show Kate Greenaway traces, pre-raphaelite features, and pre-historic graphic tracings, impressionist suggestions, etc., in short, hints of all schools, but none predominating, and none even marked. How drawing naturally precedes writing was never plainer, for, that the drawing is so good while the writing so poor is equally surprising. We have here an history of the development of the child's power of observation, and the many features and items that were evidently suggested by adults and appear for a time and then drop off till their natural time comes, is very instructive. This is the way to collect data, and if we had a sufficient number of individual series as carefully preserved, and with as little interference (although there was evidently much suggestion), by adults, inferences of great value for a natural method in teaching drawing might without doubt be drawn.

From another large collection of children's drawings the chief difference in the children seems to be due to power of observation, concentration and vigor. Some children draw a spider's web, Indian utensils, etc., with a few bold heavy lines, others with just visible and oft retraced, improved and uncertain tracings. Some focus their attention upon a few parts, and features are hazy and indistinct with all the rest, and some attempt the general effect of a large and complicated environment. Some concentrate upon a small space and others fill the paper with large general impressions. By connecting each series of drawings with the child making it, no doubt a valuable key to many traits of character would appear.

IV.—MATHEMATICS.

Address on College Mathematics, by HENRY T. EDDY, M. A., C. E., Ph. D. Professor of Mathematics and Astronomy in the University of Cincinnati. Salem, 1884, pp. 16.

The present state of mathematical teaching in our colleges and universities is deplorable. The idea of faculties, especially of classical faculties, seems to have been that mathematical training in colleges was to be regarded merely as a means of mental discipline, and not as a means of acquiring an ability to make independent research in this, the noblest of all the sciences. The result of this attitude has been to cause "mathematical study to be regarded with deep seated aversion by the average student, an aversion not capable of adequate expression in any ordinary way." In an experience of twenty years as a teacher of mathematics in colleges, "one of the most unexpected revelations which this experience has made to me is that mathematical study in college is not necessarily drudgery." But when we find the opposite feeling prevalent among faculties, and shared even by the great majority of instructors in mathematics, we can hardly wonder at the hatred of mathematics so universal among undergraduates. Classical colleges, the alleged promoters of this study, are largely responsible for the present state of dishonor into which mathematics has fallen, a state of dishonor so pronounced that not only does the undergraduate remain a total stranger to the quickening power of mathematical thought, but he fails even to gain a facility in the algebraic and formal part of mathematical reasoning. Mathematical teaching in this country is far inferior to the instruction given in European institutions, where the stimulus is enjoyed of earnest, enthusiastic original work; of the pursuit of mathematics for mathematics' sake. As a result, our young men are unequal to the mathematical studies which those of the same age but of European training successfully carry. This is not because of inferior talent, but is due to the inefficient instruction they receive. There is a natural method in the teaching of mathematics as well as of languages, and wherever it is employed, and employed by a man who loves his work, mathematics is as much and as eagerly studied as any other subject. "I wish to call for reform in our mathematical teaching. I call for deliverance from the imprisonment it has suffered, for a removal of the bands with which it has been bound. I call for the introduction of a spirit of free inquiry." Many of the younger mathematicians of this country have displayed marked ability and zeal in their work, and it is to the fire and enthusiasm of this young blood that we must look for help in establishing this science in the post of honor to which it rightfully belongs. LEVI L. CONANT.

Modern Teaching of Arithmetic, by TRUMAN HENRY SAFFORD. Atlantic Monthly, May, 1891.

In its fundamental idea the Grube method is unquestionably the correct method of teaching arithmetic. One of the chief reasons why this method has not come into more general use lies in the difficulty it presents to the teacher, who is too often wholly unfit for the work with which he is entrusted. It is a pedagogical law of the first importance that "matter taught must be mastered by the teacher not only in scientific form, but in the form in which it is to be taught." The majority of American teachers have not, unfortunately, thus mastered arithmetic. All learning of arithmetic should be by the method of discovery. Written arithmetic should be entirely subordinate to mental, and the study should finish with fractions, with the rule of three, and interest as applications. Professor Safford's article is a valuable and exceedingly suggestive contribution to current pedogogical litterature.

LEVI L. CONANT.

The Teaching and History of Mathematics in the United States, by FLORIAN CAJORI, Professor of Physics, Colorado College. Washington, Bureau of Education, Circular of Information No. 3, 1890, pp. 400.

Until within the past twenty years scarcely anything deserving the name of mathematics is to be found in this country. Even as late as 1873 "a foreign mathematician like Todhunter, well known for the fairness and candor of his views, pronounces a judgment on Americans like the following. 'I have no wish to depreciate their labors; I know that they possess able mathematicians, and that in the department of astronomy they have produced meritorious works; yet I maintain that as against us their utmost distinction vanishes. And yet with their great population, their abundant wealth, their attention to education, their freedom from civil and religious disabilities, and their success in literature, we might well expect the most conspicious eminence in mathematics.'" Previous to about 1815 our mathematics were dominated by English influence, scarcely a trace of the fruitful work of the continent finding its way to America. Of mathematical activity there was none. Of mathematical study there was almost none. Previous to 1816 the entire mathematical course at Harvard college embraced only arithmetic, algebra, and Euclid, the whole of arithmetic not being required for admission until that year. Instructors in mathematics were almost invariably men who had distinguished themselves in the classics. Appliances for teaching were altogether lacking, blackboards even being unknown. The greatest American name of that period, David Rittenhouse, is to-day practically unknown in the mathematical world.

In 1819 a translation of Legendre's geometry was published in this country. It was received with great favor, and began immediately to displace Euclid's Elements as a text book. The latter, which has held its position almost undisputed in England up to the present time, is now used in scarcely half a dozen colleges in America. Ten years after the publication of Legendre's geometry appeared the first mathematical work of any importance ever published on this side of the Atlantic, Bowditch's translation of Laplace's Méchanique Céleste. In the history of American mathematics this book was epoch making. It was the first glimpse we had received of the prodigious activity then being displayed in France, and was the beginning of an influx of French mathematics and mathematical methods, which, for almost half a century, remained the model for American imitation. The English element was almost entirely eliminated from among us, and our colleges and universities, following the example of West Point and Harvard, adopted text books which were either translations of French works, or imitations of them. Professor Cajori gives a brief sketch of the history of mathematics in about twenty of our principal colleges and universities, and biographies of our most prominent mathematicians and mathematical instructors. Among these the place of honor is held by Professor Benjamin Peirce, of Harvard, the first American to make any original contribution worthy of note to pure mathematics. His influence on American mathematics was far reaching in its results, and some of our most brilliant and successful mathematicians of to-day were pupils of his. Considerable space is given to the remarkable impulse given to mathematical work among our younger men by the opening of Johns Hopkins University, and the presence there of the great Sylvester. The time was ripe for a higher development in this, as well as in the other sciences, and this event signalized the beginning of a new era in American mathematics, an era of original research, and of post graduate courses which deserve to be dignified with the title of university work. A reproach like that uttered eighteen years ago by Todhunter is no longer deserved. American mathematics and American mathematicians are at last beginning to obtain recognition abroad, and to make themselves felt in promoting the advance of that department of pure science. Within the past few years the work of German, Swedish, Italian, and Russian mathematicians, as well as that of the French and English, has found its way to this country, and has been most helpful in the development of the activity which has now begun to produce such important results. The circular mentions nine mathematical journals, all more or less elementary in their character except the *American Journal of Mathematics*, established in 1877 at Johns Hopkins University. This is devoted entirely to advanced work, and ranks with the best European mathematical publications. A brief historical sketch of the work of the coast survey is given and a well deserved tribute is paid to its accuracy and efficiency. Short papers are also added on the History of Infinite series; on Parallel Lines and Allied Subjects; On the Foundation of Algebra; The Difference between Naperian and Natural Logarithms; and Circle Squarers.

About seventy pages of this work are devoted to statistical information respecting the teaching of the present time. Questions were sent out to universities and colleges, to normal schools, and to academies and high schools throughout the country, and the answers received are tabulated and given in full. One hundred and sixty-eight colleges, forty-five normal schools, and one hundred and eighty-one academies and high schools are represented, and the mass of information furnished by these answers is exceedingly curious, and in some respects valuable. But the one fact made most painfully apparent by it is that the mathematics of this country are still in a most chaotic state, and that mathematical knowledge is too often conspicuously lacking in those entrusted with the teaching of that science. The development which has begun in so striking a manner at the top has yet to make itself felt in the great majority of our colleges and schools of preparatory grade.

LEVI L. CONANT.

Fifteenth and Sixteenth General Reports of the Association for the Improvement of Geometrical Teaching. W. J. ROBINSON. Bedford, 1890 and 1891. pp. 56 and 69.

Through the efforts of this association, the Universities of Oxford and Cambridge have been induced to relax their regulations for examinations in elementary geometry in such a way as to sanction the use of text-books other than editions of "Euclid's Elements," still requiring, however, adherence to Euclid's sequence. A similar concession has been made by the commissioners in charge of the civil service examinations. The syllabus of geometry put forth by the association has sensibly modified recent editions of Euclid. The report contains a valuable paper by the president, Prof. G. M. Minchin, on "The Vices of our Scientific Education." Professor Minchin notes the existence of a wide spread feeling that the present educational system, and especially the present examination system, produces dangerous mental pressure, and results in physical mischief. This feeling he believes well grounded. Instancing the examinations for the Mathematical Tripos at Cambridge, he says: "Are we really to believe that a young man of twenty-one or twenty-three has made himself master of nearly everything given to the scientific world by Newton, Laplace, Gauss, Jacobi, Helmholtz, Cayley, Thomson, and Clerk Maxwell?" A rage for rushing students through elementary pure mathematics in order to launch them early into physics and mechanics results often most disastrously to the student, giving him a cramped and stunted knowledge containing nothing of spontaneity, nothing of power, but much of danger. The great evil of mathematical instruction to-day is the systematic "hurrying away from such fundamentals as algebra, trigonometry and the calculus, in order that our students may exhibit an acquaintance with the more showy branches of physics." This kind of teaching, together with the entire system of examinations, simply encourages cramming in its most vicious form. But the examination system, whatever its defects, is good in principle. "Every good examination is a good, inasmuch as its puts to the test the result of the student's study, shows him the extent to which he has a command of the subject, points out where his study of the bearings of some principle has been hasty or superficial, and where consequently his grasp of it is really feeble; and I know of nothing but examination that will do this."

The association still continues its good work of endeavoring to procure a relaxation from the rigid adherence to Euclid's Elements as a text-book, which is to be found almost universally in Great Britain. Notwithstanding the concessions obtained the preceding year, the report notes that the examinations for Responsions at Oxford still consist exclusively of book work, and contain nothing to test the ability of the student for original work. From Dublin university no concession has yet been obtained, "the only result at present being that 'they are not prepared to decide on such an important question without much consideration.' The council, however, is assured by the registrar that the subject will not be lost sight of, and it has reason to believe that the examiners in the University of Dublin do not really require such a rigid adherence to Euclid's text as might be supposed from the regulations." During the past year a syllabus on plane geometry has been issued, and syllabi on solid geometry. Modern geometry and mechanics are in preparation. The president, Prof. G. M. Minchin, stated that the work of the association was, as a whole, progressing favorably. There exists to-day an imperative need for better and more accurate text-books, and this need the association hopes in some measure to supply.

The report contains the following papers: A New Treatment of the Hyperbola, by Rev. C. Taylor, D. D.; The Teaching of Plane Trigonometry, by G. Heppel; Some Geometrical Theorems, by E. M. Langley; and Statics and Geometry, by G. M. Minchin. Twenty-six geometrical figures are given illustrating the papers read.

The report contains also a paper by the retiring president, Mr. R. B. Hayward, on Horner's Method of Involution and Evolution, showing its marked superiority to the methods still given in so many of the text-books in common use. LEVI L. CONANT.

V.—COMMON SCHOOLS.

Vorschule oder Volkschule, A. HOLLAND, Berlin, 1889.

"Preparatory schools, the chief purpose of which is to fit for higher institutions, are an evil," has been the burden of quite a body of recent German literature. While these schools are old, general schools for the people are of recent origin. Till the discovery of compass, gunpowder, paper and printing and America the trivium and quadrivium sufficed.

The Reformation and later pietism aided to develop the realistic volksschool. Piety and practical life was a good combination, but sometimes the piety overcame the realism, and sometimes vice-versa. Bishop Comenius first set the true key for volkschools of all time. After the 30 years' war Pestalozzi reanimated the idea of general human culture. The king said in 1806 that although Germany had become smaller in territory she must find in schools increase of strength; Queen Louisa thanked Pestalozzi in the name of humanity for his lifelong work fixed to the last on this one end, and able men were sent by the government to catch his inspiration. Thus the volkschool was born. Preparatory schools (Vorschulen) on the other hand were deemed needful a few decades ago to fit boys for seats in gymnasia, and their classes were sometimes named *Septima*, *Oktava*, *Nona*. The volkschool meanwhile grew from one to three, and later six and eight classes. Nothing was too good for it, and instruction was made the basis of all knowledge, and harmonious development and many-sided interest secured. The better the volkschool the less can it be preparatory. The latter function tends to routine, cram, mechanism and mere training. Poor children know less words but their knowledge of things is closer and surer, while the danger of moral contagion is no greater among children of the poor than of the rich. Only those who have proven themselves best in the volkschool should enter gymnasia, but all who go to preparatory schools enter and then deteriorate the lower gymnasia. The former draw away public interest, and the best teachers from the public schools, cultivate, a spirit of caste, compel to a premature determination of a career, crowd gymnasia and universities and thus favor half-culture. One well-known teacher even affirms that more dull boys enter real schools from the preparatory than from the volkschools.

Die Vertretung des Lehrerstandes in der Schulverwaltung, von A. HORSTMANN, Berlin, 1888. p. 42.

The school will be the plaything of parties till state, church, village and family are represented in its control. It must be a "free community" in the well known sense of Dörpfeld, with the Hohenzollern motto *suum cuique*. No one, and indeed no combination of extraneous influences must dominate, but each community must develop each institution according to its nature. In every other occupation and interest men with technical training lead, but teachers are still excluded from school boards even now, after pedagogy has become a science, and Prussian teachers have an average six years of preparation. Teachers should now and by this among other means seek emancipation from their dependent position. Laws placing one in nine of the leading active teachers on the local school board were passed in other German states as follows: Saxony, 1873; Baden, 1876; Hamburg, 1870; Hesse Darnstadt, 1874; Gotha and Anhalt, 1873, etc. This is a natural right of teachers if supervision is to be expert, internal and efficient. The expert questions usually coming before local boards are tabulated with a view to show this (e. g., applications of money for building, school apparatus, text-books, leave of absence, new teachers, relations of parents to school rules, discipline of teacher and pupil, peace-making, protection of school work from all distractions, etc.) Schools need not only general oversight but minute inspection. Every school should be under a local board or college composed of the burgermaster, chief of parties, two citizens,parents, and at least one teacher. In larger places where there is more than one school there must be in addition to the local college a school committee or deputation of which the school superintendent and the head of the chief school should be members. Many resolutions and propositions of teachers' associations in favor of these plans are cited.

Der Gedanke der Allgemeinen Volkslchule im Lichte der Zeit, VON A. BÜTOW, Berlin, 1888.

The author deplores the many varieties of schools now existing in Germany; middle, burger, volks, preparatory schools, etc., and also the many things now crowded onto schools, workshops, school banks, mission hours, vacation colonies, school gardens, etc., and pleads for one common school for all classes. He says teachers in upper often refuse to associate with those of lower classes, that there is almost no common bond of sympathy between gymnasia and other schools and that caste distinctions are favored. Distaste for work and the parents' humble way of life and extravagant ambitions are fostered and thus the many who leave the gymnasia during its course without completing their work in the university emerge from school with everything to learn. A robust, practical volkschool for all classes is a social necessity that classes may know each other and that youth may learn their own aptitudes. Half-culture would be avoided, children would be protected from unnatural callings, and rich and poor would know each other.

Origin and Development of the New York Common School System, by A. S. DRAPER, State Supt. of Schools, 1890. pp. 48.

This convenient sketch gives a birds-eye view from 1621 to the present. The early Dutch settlers were indifferent to advanced, and the English to elementary schools. The latter felt that learning brought heresy and insubordination. The board of regents and King's and then Columbia College, both preceded state elementary schools which were provided for only in 1795. The first appropriation to this end was made when the state was heavily in debt, but was the same per cent. of the valuation of the state as is made now. The state *required* (not authorized) every town to raise by tax half as much more as it received from the state. Still the prevalent idea was that each individual should educate his children, and only if he failed public or private charity should be invoked. The landmarks in this history are the following: the public school society of New York, 1805, to educate the poor and those provided for by no religious society; the virtual abolition of the rate bill, 1849, by which parents had been taxed according to the number of days their children attended school; the granting to local authorities in 1866 the power to acquire school sites by right of eminent domain, and the more complete authority of the state. State supervision has existed in New York since 1812. County or district supervision since 1841, with a brief interval, and by town officers from 1795 to 1856. All these influences aided by an increasing general and local tax which in 1889 was $17,000,000, made the system of New York, in the judgment of Horace Mann and Henry Barnard, in advance of all the other states in 1845. A "society of associated teachers," 1794, lasted 13 years. It was essentially secret and for mutual improvement and undertook to examine a report on text-books. A state teachers' association has existed since 1845.

The author is a strong advocate of centralization and state control, believes New York on the whole has not been behind New England in educational matters, and holds that the worst foe of the republic is "the man whose politics, religion, ignorance or selfishness" leads him to disparage or thwart our free school system, for common schools and self-government are one and inseparable, and expresses the hope that some historian with more leisure may write in a fuller and more original way the record he has outlined.

Was Lernen Unsere Söhne! Was Sollen sie Lernen! Dresden, 1891.

This "practical proposition for a new school" is an anonymous pamphlet of a truly revolutionary type. From a teacher of any subject who has spent his time and money in learning it, it is idle to expect active co-operation in any reform that will cheapen his stock of learning and methods, which his fame and bread depend on magnifying. To learn anything not of future use is a dead loss. The school of to-day does not find out still less develop the chief gifts of a child, and many careers fail from this cause. The first problem is to determine the various callings and then the forms of culture most useful for them. It will always be true of scholars as Mephisto has it, "What does not touch them is miles away; what they do not grasp has no existence," etc. All that is not seen to be *useful* knowledge can never awaken any real interest. From the standpoint of practical vocations this knowledge is divided into, color, form, mechanical and natural forces, mathematics, language, soul, history, proof, wit and music. In the first tables under each of these 10 vocations which they aid, studies are enumerated in the order of serviceability, and two more tables are devoted to hour plans. The subject of wit, e. g., is serviceable especially for publishers, diplomatists, clergymen, adventurers, journalists and actors, and generally for all, and is taught by selections.

Education in India. SIR W. W. HUNTER, Pres. Ind. Ed. Com., in Subjects of the Day, May, 1890.

State education may be dated from Sir Stafford Northcote's Despatch of 1854, though the encouragement of education has from time immemorial formed one of the recognized functions of government in India. The East India Company maintained existing educational endowments, and in 1781 Warren Hastings established the Calcutta Madrassa, or great Mohammedan College in Bengal. The charter of 1813 provided that a sum of Rs.100,000 should be annually expended on education from the public revenues. Previous to this time much had been accomplished by missionary bodies and non-official school societies. A Committee of Public Instruction was organized in 1823. The contest as to the predominance of English or Sanskrit and Arabic in the higher education was decided in 1835 in favor of English. The attempt to combine English with the vernaculars of India in the lower schools was supplanted by establishing English as the medium of higher instruction and the vernaculars of the lower. A separate department of public instruction was constituted in every province of India by the Despatch of 1854, which still forms the charter of education in India. In 15 years (1855-70) the school attendance increased from 923,780 to 1,894,823; the attendance in normal schools and classes from 197 to 5,368. Among the effects of state education were noticed an enormous increase in the number of young men desirous of a professional education, and the supplanting of Mohammedans by Hindoos in the professions and official positions, owing to the fact that the Hindoos gladly availed themselves of the new system of instruction, while the Mohammedans cherished their ancient system of religious education based upon Persian, Arabic and the Koran. The dangers from the redistribution of employment and race upheaval were reduced by the Education Commission of 1882. Private enterprise and native management are now encouraged, female education is stimulated, special encouragement is given to Mohammedan institutions, more attention is given to the middle and lower classes. From 1881 to 1889 the total number of pupils rose from 2 millions to 3½ millions, and the total expenditure from 10 to 19 millions of rupees. The number of candidates for the entrance examination at Calcutta University has increased from 2,031 in 1882 to 4,305 in 1888; at Madras, from 3,519 to 6,582; at Bombay, from 1,260 to 3,012; the graduates in law at Calcutta from 35 in 1881 to 238 in 1888. The standards of pass-examinations in Indian universities are as high as in England, but the system of specializing in the English universities carries their best men much farther than the Indian system does. In female education there are special difficulties: the desire for education as a means of earning a livelihood does not exist among the female population, social customs put an end to a girl's school-going in her ninth to eleventh year, the supply of female teachers is greatly deficient, and the state system had to be conducted in a large measure by a male staff, a system not in accord with the feelings of the people. The results of the vast extension of education in India permeate every sphere of human activity. In religious liberality, moral enlightenment, industrial and commercial enterprise, there has been a marked advance. REIGART.

Notes on American Schools and Training Colleges, by J. G. FITCH, M. A., L.L. D. Macmillan & Co., London and New York. 1890.

These "Notes," reprinted from an English educational blue-book, and designed primarily for English readers, have a two-fold value for American teachers. First, they show how our public school system appears to one of the most eminent of English educators, and indicate some of the points of contrast between it and the English system; second, they intensify our consciousness of the defects of our own schools. The author, who is one of her majesty's inspectors of training colleges writes in an appreciative spirit of American education. He saw some of our best schools, and his opinion is in the main encouraging. Naturally one of the first things mentioned is the diversity of organization and of administration in American schools, due to the autonomy of the local authorities in educational matters, and the author points out that the one prerogative of an independent and autonomous government with which the states are not likely to part is the absolute control of education. Perhaps the most serious evil that the author has noted in our public school system is the one growing out of this autonomy of the local authorities, namely, the influence of local politics in school management. Among the other evils which he notes are the following: small play grounds and too limited air-space per pupil in some schools, too much memorizing, idolatry of text-books, method-cramming and slavery to pedagogical formulae, and the crushing out of individuality and originality by the custom of judging schools by methods and machinery adopted rather than by results achieved. Among the things that he commends are the continuous blackboards on the walls of our schoolrooms, the practice of oral composition, the adoption of the Grube method and the custom of giving original problems in arithmetic; our lessons in patriotism, platform exercises, teachers' institutes and associations, the Chautauqua movement, teachers' reading circles, the popular interest in education, and the attention given by teachers to the philosophy of education and to psychology. The book is well written and forms an excellent brief survey of the present condition of American education. W. H. B.

VI.—INTERMEDIATE EDUCATION.

Die Stundenpläne der Gymnasien, Real Gymnasien und Lateinlose Realschulen. G. UHLIG. pp. 52.

This valuable compilation of hour plans embraces all the leading German states, eleven in number. Thirty plans are printed with copious notes and a summary table at the end showing the weekly hours for each of the nine classes of four kinds of schools in each state. Only obligatory hours are included, and singing and gymnastics are excluded. A novel method of presentation is that of adding the number of weekly hours in all classes together. Treated thus the largest number of hours is found in the Stuttgart real gymnasia, 284, and the smallest in the Bavarian gymnasia, 227; a difference of 57 hours. In Prussia the real gymnasia have 12 hours more than the gymnasia, in Bavaria 31 more, in Würtemberg 20 more. The Stuttgart real gymnasium has also the largest number of weekly hours per class, 35, for unter-prima. The lowest number, 23, is found in the quinta and sexta of the Bavarian gymnasia. The greatest difference of hours in the different classes of the same school is 10 (viz., 33—23) in Baden. The greatest uniformity in hours for all classes and ages is in Prussia where it varies between sexta and oberprima only one hour, 29-30. Usually, but not without exception, the hours increase from the lower to higher classes. Passing to the individual subjects we observe in *Religion* sometimes two hours per week are required for all classes, elsewhere three and even four in the lower classes with corresponding reduction in the higher. The Saxon gymnasia give most and the Stuttgart real-gymnasia least religious instruction. In Elsas the government now dispenses from religious instruction all who have a "sufficient substitute" elsewhere, and those undergoing preparation for confirmation in church schools. *German*. For middle classes two, and upper and lower classes three hours is usual in gymnasia, the real-gymnasia have more, and the Latin less schools most German. The latter have what would equal from 7 to 11 hours per week for one year, more in the entire course than the gymnasia. In *Latin* the extremes are Stuttgart 102 and Elsas 71. The difference in this subject is greatest and falls mostly on the lower classes. To give this work the greatest possible efficiency with least time a new law for Elsas requires the division of all classes of more than twenty in sexta or quinta. Saxony and Stuttgart represent the extremes of most and least Latin in real schools. In *Greek* the extremes among gymnasia are 46 and 36, in Neubrandenburg and Baden respectively. In *French* the gymnasia vary from 24 to 8 hours per week if all are reconed for one year. Here, too, in some places classes must not exceed 20 in quinta and quarta. In real-gymnasia French varies between 34 and 6, and in Latin-less real schools between 61 and 28 in different places. Save in three towns where it is required two hours per week for the four last years, *English* is optional in gymnasia. In real-gymnasia it varies from 20 to 11 and in Latin-less real schools from 26 to 10, and it is begun from two to five years later than French. *History and Geography*. The norms often leave these undistinguished. Reconing thus the extremes are 32 and 25, and real and Latin-less schools do not vary much from this. *Arithmetic and Mathematics*. Gymnasia 36-32; real-gymnasia, 59-39; and Latin-less real schools nearly the same. In Prussia and Saxony geometry begins in quarta and elsewhere it begins a year, or even three years, later. In Bavaria and Würtemburg geometry and algebra begin in unter-secunda. In Elsas there is a facultative course in the elements of spherical trigonometry and analytical geometry in ober-prim. *Natural History*. While there is much uniformity between all German gymnasia in mathematics we find the greatest differences in natural sciences. Bavaria excludes them all while Prussia and Baden give them 10 hours. They rarely appear beyond tertia. In realgymasia the extremes are Prussia 12, Bavaria 4 hours. *Physics and Chemistry*. Extremes 10 and 2 hours. Chemistry is never required in gymnasia, save as its elements are connected with courses in physics or mineralogy, but these studies come later in the course than Natural History. The two are often undistinguished in Latin-less real schools. This distinction Prussia forbids, to show both their connections, and the confessedly elementary nature of the instruction. They are distinguished in real-gymnasia, and the extremes for physics are 12 and 6, and those for chemistry 8 and 3 hours. *Philosophical Propadeutik*. This is required only in Würtenburg (2 hours in ober-prima), in Baden and in other isolated places. The official plan in Bavaria requires that the instruction in German close with a course on the chief facts of empirical psychology and formal logic. A Prussian circular (1882) affirms the great utility of such a course, but states that ability to make such a course fruitful is so rare that it is left to the discretion of the directors. A Saxon rescript of the same year has a similar tenor. In the real-gymnasia of both Würtenburg and Bavaria a little final instruction in these subjects is required. *Writing* hours in gymnasia vary from 9 to 2. *Drawing* from 10 to 0, but in real-gymnasia from 24 to 16. Dispensation from *singing* is everywhere granted during the period of mutation on hygienic ground, and also if voice or ear are defective. In most states it is otherwise obligatory, as is the theoretical part of music often even for defectives and during change of voice. *Gymnastics* is commonly obligatory two hours per week, but in many gymnasia it is optional, and in others where facilities are lacking it is required only in summer. On the whole one hour per week is the most common time. For a number of subjects this is the most usual time and almost all have this time somewhere and at some part of the course.

Plan d'études et programmes de l'enseignement secondaire classique dans les lycées et collèges, (classe de lettres), 1885. Paris. Delalain frères. pp. XXXV, 80.

Plan d'études et programmes de l'enseignement secondaire classique dans les lycées et collèges, (classe de lettres). Anêtés des 28 janvier et 12 aout 1890. Paris. Delalain frères. pp. VII, 83.

Plan d'études et programmes de l'enseignement secondaire spécial dans les lycées et collèges. Prescrit par Anêté du 10 aout 1886. Paris. Delalain frères. pp. XXXIV, 84.

Plan d'études et programmes de l'enseignement secondaire des jeunes filles. Prescrit par Arrêté du 28 juillet 1882. Paris. Delalain frères. pp. XLIV, 64.

These pamphlets contain the reports made to the Superior Council of Public Instruction by the various commissions appointed to revise the plan of study and the programme for the *Lycées* and for the girl's schools, the acts of Council establishing the revision, and the programmes themselves. In accordance with the latest change made, that of January 1890, the maximum time given to work, (recitations, study and drawing,) is fixed at six hours in the primary classes and elementary division; eight hours in the grammar division; ten and one half hours in summer and ten hours in winter in the higher division. This does not include the classes preparing for the government schools. In the primary class and the elementary division the recitations are two hours in length interrupted by recreation for fifteen minutes. In the grammar and higher division, two hours is given to a recitation in the principal studies, one hour and a half to others, except geography to which one hour is given. In the highest class, the class in philosophy, all recitations continue one hour and a half. Changes in these divisions of time may be made under certain conditions. The younger pupils rise at half past six o'clock; the older ones at half past five in summer, at six in winter.

In the elementary and grammar divisions the reduction in time is four hours a week, except in the class in philosophy. Here the reduction is apparently slightly greater, and drawing is optional. Most time has been taken from the natural sciences and drawing, and least from ancient languages and French. In the schools for special instruction the time saved by omitting ancient languages has been given in somewhat greater proportion to modern languages and French than to the sciences. Drawing receives a large proportion of time, but is attended to outside the hours of recreation.

All the changes have been made for the purpose of lightening the burdens of the pupils. The hours for study and recitation have been shortened and periods for recreation have been made longer and more frequent.

Weekly Programme.

Elementary Division.

PREPARATORY CLASS.

	1880	1884	1890		1880	1884	1890
French,	10 hrs.	9 hrs.	9½ hrs.	Sciences,	4 hrs.	3 hrs.	2½ hrs.
Modern languages,	4 "	4 "	4 "	Drawing,	2 "	1 "	1 "
History, geography,	4 "	3 "	3 "				

SEVENTH AND EIGHTH CLASSES.

French,	10 hrs.	9 hrs.	9 hrs.	Sciences,	4 hrs.	3 hrs.	3 hrs.
Modern languages,	4 "	4 "	4 "	Drawing,	2 "	1 "	1 "
History, geography,	4 "	3 "	3 "				

Grammar Division.

SIXTH CLASS.

French,	3 hrs.	3 hrs.	For '90	History, geography,	3 hrs.	3 hrs.
Latin,	10 "	10 "	see	Sciences,	3 "	2 "
Modern languages,	3 "	2 "	below.	Drawing,	2 "	

Grammar Division.

SIXTH CLASS. 1890.

French,	3 hours.	Ancient history of the East,	1½ hrs.
Latin,	10 "	General geography of the world,	1 "
Modern languages,	1½ "	Drawing,	1½ "
Zoölogy; exercises in arithmetic,	1½ "		

A lecture on modern languages an hour in length [without exercises or lessons] is given once a week to all or a part of the pupils from the Sixth to the Second Class.

FIFTH CLASS.

French,	3 hrs.	3 hrs.	For '90	History, geography,	3 hrs.	3 hrs.
Latin,	10 "	10 "	see	Sciences,	4 "	2 "
Modern languages,	3 "	2 "	below.	Drawing,	2 "	

Greek is begun on the first of January. Two hours taken from Latin are given to it.

FIFTH CLASS. 1890.

French,	3 hours.	in arithmetic,	1½ hours.
Latin,	10 "	Greek history,	1½ "
Modern languages,	1½ "	Geography of France,	1 "
Geology (1st half year) botany (2nd half year) and exercises		Drawing,	1½ "

Greek is begun the 1st of January. Two hours taken from Latin are given to it.

FOURTH CLASS.

	1880	1884		1880	1884
French,	3 hrs.	2 hrs.	History geography,	3 hrs.	3 hrs.
Latin,	6 "	5 "	Sciences,	3 "	2 "
Greek,	6 "	6 "	Drawing,	2 "	
Modern languages,	2 "	2 "			

FOURTH CLASS. 1890.

French,	2 hours.	Roman history,	1½ hours.
Latin,	5 "	General geography and geography of America,	1 "
Greek,	6 "	Drawing,	1½ "
Modern languages,	1½ "		
Geometry,	1½ "		

HIGHER DIVISION.

THIRD CLASS.

	1880	1884		1880	1884
Latin,	5 hrs.	5 hrs.	History, geography,	4 hrs.	3 hrs.
Greek,	5 "	5 "	Sciences,	3 "	3 "
French,	3 "	2 "	Drawing,	2 "	
Modern languages,	3 "	2 "			

THIRD CLASS. 1890.

Latin,	5 hours.	Mathematics,	3 hours.
Greek,	5 "	History,	1½ "
French,	2 "	Geography,	1 "
Modern languages,	1½ "	Drawing,	1 "

The lessons in geography are given outside the hours usually devoted to recitations.

SECOND CLASS.

	1880	1884		1880	1884
Latin,	4 hrs.	4 hrs.	History, geography,	4 hrs.	3 hrs.
Greek,	5 "	5 "	Sciences,	3 "	3 "
French,	4 "	3 "	Drawing,	2 "	
Modern languages,	3 "	2 "			

SECOND CLASS. 1890.

Latin,	5 hours.	Mathematics,	1½ hours.
Greek,	5 "	History,	1½ "
French,	3 "	Geography,	1 "
Modern languages,	1½ "	Drawing, (optional)	2 "

CLASS OF RHETORIC.

	1880	1884	1890		1880	1884	1890
Latin,	4 hrs.	4 hrs.	4 hrs.	History, geography,	4 hrs.	3 hrs.	2½ hrs.
Greek,	4 "	5 "	4 "	Sciences,	3 "	3 "	1½ "
French,	5 "	3 "	4 "	Drawing,	2 "		2 "
Modern languages,	3 "	2 "	2½ "	Mathematics,	1½	(Optional)	2 "

In the programme for 1890 one hour a week is reserved for a lecture on history and geography. Fifteen hours are to be given to teaching cosmography.

CLASS IN PHILOSOPHY.

	1880	1884		1880	1884
Philosophy,	8 hrs.	8 hrs.	History,	3 hrs.	2 hrs.
Latin and Greek authors,	1 "	1 "	Sciences,	10 "	8 "
Modern languages,	1 "	1 "	Drawing,	2 "	

CLASS IN PHILOSOPHY. 1890.

Philosophy (1st half year,)	6 hours.	Contemporary history, 1st half year,	3 hours.
" (2nd half year,)	7½ "	2nd half year,	1½ "
Physics and Chemistry,	4½ "	Drawing, (optional)	2 "
Elements of natural history,	1½ "		

A lecture of one hour on modern languages (optional).

Twelve lectures of one hour each on hygiene.

Slight changes were made in the programme in 1885 but the number of hours of instruction remained the same.

SECONDARY INSTRUCTION IN THE LYCÉES AND COLLÈGES. SPECIAL COURSE. (Scheme adopted in 1886.) WEEKLY PROGRAMME. FIRST YEAR. (Pupils from ten to eleven years old.)

French,	7 hours.	Natural history,	2 hours.
Modern languages,	5 "	Outside of hours of recitation,	
History,	2 "	Writing,	2 "
Geography,	1 "	Drawing,	4 "
Mathematics,	3 "		

The languages studied this year in addition to French are German and English; history includes the early history of France and a summary of that of the Middle Ages; mathematics includes arithmetic and geometry; natural history is zoölogy.

SECOND YEAR. (Pupils from 11 to 12 years old)

French,	5 hours.	Physics,	2 hours.
Modern languages,	5 "	Natural history,	1 "
History,	2 "	Outside the hours of recitation,	
Geography,	1 "	Writing,	1 "
Mathematics,	4 "	Drawing,	4 "

German and English are continued; history goes on from Louis XI to 1789; mathematics is still arithmetic and geometry; physics includes lessons on matter, heat, electricity, and magnetism, natural history is botany.

THIRD YEAR. (Pupils from 12 to 13 years old.)

French,	4 hours.	Chemistry,	2 hours.
Modern languages,	4 "	Accounts,	1 "
History,	2 "	Outside the hours of recitation,	
Geography,	1 "	Writing,	1 "
Mathematics,	4 "	Drawing,	4 "
Physics,	2 "		

The French classical authors are begun this year; Lessing, Schiller, and Grimm in German; Washington Irving, Swift, DeFoe, R. H. Dana, and others in English; history is brought down to the present time, Algebra is begun in the place of arithmetic; chemistry and the keeping of accounts is added.

FOURTH YEAR. (Pupils from 13 to 14 years old.)

French,	3 hours.	Physics,	2 hours.
Modern languages,	5 "	Chemistry,	2 "
History.	1 "	Natural history, (one half the year)	2 "
Geography,	2 "	Accounts,	1 "
Morals,	1 "	Outside the hours of recitation,	
Legislation, (one half the year)	2 "	Drawing,	4 "
Mathematics,	4 "		

During the 1st, 2nd and 3rd years one foreign language is required, either German or English. This is called the *fundamental language* and must be continued through the entire course. In the 4th year another must be added, the complementary language, either German, English, Spanish, Italian or Arabic. Two of the five hours are given to the fundamental, three to the complementary language. The History of Civilization, of the East, of Greece and Rome are studied; morals covers the subjects of duties, domestic, social, civic, etc.; legislation, the subjects of rights, powers, property, etc.; geology takes the place of botany.

FIFTH YEAR. (Pupils from 14 to 15 years old.)

French,	4 hours	Physics,	2 hrs.
Modern languages,	5 "	Chemistry,	2 "
History,	1 "	Natural history, (one half the year)	2 "
Geography,	1 "	Outside the hours of recitation,	
Political economy (one half the year)	2 "	Drawing,	4 "
Mathematics,	6 "		

Trigonometry is added this year; in history, civilization in the Middle Ages and in modern times is studied.

SIXTH YEAR. (Pupils from 15 to 16 years old.)

French,	2 hours.	Physics,	2 hours.
Philosophy,	4 "	Chemistry,	2 "
Modern languages,	5 "	Natural history, (one half the year)	2 "
History,	1 "	Outside of hours of recitation, Drawing,	4 "
Geography,	1 "		
Legislation, (one half the year)	2 "		
Mathematics,	6 "		

The philosophy taught this year is both scientific and moral. Some of the topics are *The Classification of the Sciences*, their *objects*, *divisions*, *methods*, *definitions*, *axioms*, *demonstrations*; under *legislation* the laws relating to commerce, manufactures, etc., are considered; under *natural history* some of the topics are *The organs of Sense*, *species*, *races*, *heredity of organic forms and instincts*, *natural and artificial selection*; *the anatomy and physiology of vegetables.* Drawing includes lessons on the history of art.

SECONDARY SCHOOLS FOR GIRLS.

First year. Minimum age 12 to 13.

WEEKLY PROGRAMME.

French language and literature,	5 hours.	Drawing and writing,	3 hours.
Modern languages,	3 "	Vocal music,	2 "
History and geography,	4 "	Needlework,	3 "
Mathematics,	2 "	Gymnastics,	1 "
Natural history,	1 "		

SECOND YEAR. Minimum age 13 to 14.

Same as the first year.

THIRD YEAR. Minimum age 14 to 15.

Morals,	1 hours	Physiology, Domestic economy, Hygiene,	1 hours.
French language and literature,	4 "	Drawing, and history of art,	3 "
Modern languages,	3 "	Vocal music,	1 "
History and geography,	3 "	Needlework,	3 "
Mathematics,	1 "	Gymnastics,	1 "
Physics and chemistry,	3 "		

FOURTH YEAR. Minimum age 15 to 16.

Morals,	1 hours	Physics,	1 hours
French language and literature,	4 "	Physiology, animal and vegetable,	1 "
Modern languages and literature,	3 "	Needlework,	3 "
History,	2 "	Gymnastics,	1½ "
Cosmography,	1 "		

In this year there are in addition two optional courses; series A and series B.

SERIES A.

Ancient literatures,	3 hours.	Elements of Latin,	1 hour.

SERIES B.

Mathematics,	3 hours.	Drawing,	3 hours.
Vocal music,	1 "		

FIFTH YEAR. Minimum age 16 to 17.

Elements of Psychology,	1 hours.	Notions of common law, Domestic economy,	1 hours.
French language and literature,	3 "	Physics and chemistry,	2 "
Modern languages,	3 "	Needlework,	3 "
History,	2 "	Gymnastics,	1 "

OPTIONAL COURSES.

SERIES A.

Ancient literatures,	2 hours.	Elements of Latin,	1 hour.

SERIES B.

Economic geography,	1 hour.	Vocal music,	1 hour.
Mathematics,	2 "	Drawing,	8 "
Animal and vegetable physiology,	2 "		

Recitations in girls' schools are one hour in length. Two lessons are given in the morning and two in the afternoon. Needlework and gymnastics are taught three times a week after the morning classes. There is no school on Thursday. This programme was arranged in 1882. By the law of 1890 the hours of instruction in the schools for special instruction were reduced to twenty per week. No programme is at hand which has been published since that time. E. M. H.

The Gap between Common Schools and Colleges, by PRESIDENT CHARLES W. ELIOT, of Harvard University, the Arena, July, 1890.

The rural masses, three-fourths of the American people, are unprovided with secondary schools. Massachusetts is the only state which has mandatory legislation on the subject. Of her 230 so-called high schools about one-tenth fit for Harvard College. Although five-sixths of our American colleges and universities are obliged to maintain preparatory departments against their will, but half of the best children of the land have an open road to college. For the chaotic state of secondary education here several palliatives and remedies are suggested. (I) For candidates for the degree of B. S., less preparatory training might be required than for candidates for B. A.; easy admission to special courses. For raising and unifying examinations the New York system of regents examination is commended, although some of its methods are criticised. The worst system is said to be where the college president has the subject of admissions in his own hands, so that bad schools are not exposed and good schools cannot show themselves good. College entrance examination conducted simultaneously by a few of our larger universities in many parts of the country are perhaps the most effective mode of grading and stimulating schools.

VII.—GENERAL PEDAGOGY.

VACATION COURSES AT GERMAN UNIVERSITIES.

It is of no little interest to note the first signs of a desire on the part of the German university to widen its influence, and put itself into more sympathetic relations with the intellectual life of the German people. The German university has certainly not been above the reproach of an academic exclusiveness and perhaps narrowness, and it is this that has had, probably, most to do toward bringing the university, along with the lower and middle schools, under the general discontent that finds expression in a demand for the reform of the whole educational system, from the university to the lowest *Volks-schule*. That the *Reform-Movement* will be able to make any considerable impression upon the university from without seems at the present not at all likely. That some reform may come from within is possible, perhaps probable. What direction it will take cannot now be said.

In England, as the result of a similar discontent, the movement to popularize university culture has after some years struggle assumed what appears to be a definite and permanent form. The Oxford and Cambridge university extension courses are no longer mere experiments. In America, the American university is being born again; and in this organization two seemingly opposite tendencies are noticeable. The one has given us the much needed specialized university after the German type; the other is met with in university extension schemes of many sorts, and has lately taken permanent steps in the American Society for the Extension of University Education. What these two tendencies will ultimately do for the American university no one can at present more than guess at. The two tendencies, in America at least, are not at bottom opposing. Specialization need not mean exclusiveness or narrowrowness, and the outcome of university reform in America, would seem to be to increase our store of knowledge and at the same time to scatter it more widely abroad. The fountain of knowledge is not only being deepened so that its waters shall be purer, but its rim is being widened so that more may drink.

This movement in England and America for university extension is not an universal tendency, for in France university reform is rather toward contraction than expansion. The public courses, once so popular, are being replaced by private specialized lectures, which cannot appeal to an audience beyond the limits of the university. It is not necessarily to be awaited, therefore, that the future of the German university will follow the course of the American and English universities. But this much may be said, that the summer courses given this year at Jena, Berlin and Bonn hint strongly at a movement in this direction.

Jena is mentioned first, because it was the University of Jena, which in the summer vacation of 1889 inaugurated the first public course of lectures offered by the philosophic faculty of a German university to others than an academic audience. The idea was no doubt taken from the vacation courses offered by many medical faculties to practicing physicians. So much are these medical courses appreciated by physicians, who feel the special need of knowing the latest discoveries in their science; that at the smaller University of Jena 60 to 80 are in attendance yearly. The idea of offering similar courses within the philosophic faculty originated with Dr. Detmer, Prof. of Botany, and Dr. Rein, Prof. of Pedagogy. Their purpose in the first instance was to bring together for a few weeks during vacation time teachers of the higher schools, and by a course of carefully chosen lectures to put them in possession of the newest material that would be of advantage to them in their educational work. A teacher of physics would be offered special opportunities for learning the latest discoveries in physics, a teacher of botany was to be told of the advancement that had been made in botany. But at the same time, courses of lectures were offered by Prof. Rein in pedagogy, and by Dr. Rein in physiological psychology. The course was therefore a broad one; a teacher could not only improve himself in his own special branch, but in his knowledge of educational methods.

In 1889, the attendance at the first course was 20; in 1890, the course was repeated and the attendance increased to 40; this summer, for no apparent reason, the attendance fell off to 26. It may be that the establishment of similar courses at Berlin, Bonn, and also at Nice, had some effect in lessening the attendance at Jena, for these courses consume the much needed vacation of the teacher, and other things being equal, he would much rather combine a little pleasure with profit, and spend it in the capital city at the largest university. But this could have had but little effect this year, for the courses at Berlin and Bonn were conceived in a much narrower spirit and were confined in subject matter to philology, while those in Jena, outside of the more general subjects of pedagogy or psychology, embrace the natural sciences—botany, physics, physiology, biology, school hygiene, geology, chemistry. The courses in Berlin were begun this summer, in consequence of a report of Dr. Vogel, a gymnasium director in Berlin, who had been appointed by the

Cultus minister to examine into and report upon the work at Jena. In the spring, Berlin proposes to extend the range of subjects offered, which will be made to include natural science and pedagogy, as well as philology. Similar courses were also offered this summer in Bonn and Nice. Further, Dr. Götze of Leipzig, the director of the Manual Training Institute, founded by the German Society for Manual Training (Deutscher Verein für Knaben-Handarbeit), declares privately his intention of establishing similar courses for the special benefit of teachers who attend the institute during the summer vacation. They will be of such a nature, however, as to attract teachers who have no special interest in manual training work.

That the course in Jena has been a success, and has attracted so much attention, is due to the efforts of Profs. Rein and Detmer, with their colleagues. The efforts of all the professors who took part in the courses was directed to present their material in such a way that their hearers would carry away with them the largest amount of knowledge acquirable in the short time at their disposal. There seemed to be the hearty appreciation of the spirit and energy of the lecturers, and it was the opinion of those that attended that they were carrying away with them much that would be of value.

What the future of this and like movements will be it would be difficult to say. For the present they are worth watching.

LEIGHTON WITMER.

Education et Hérédité. Etude Sociologique. Par M. GUYAU. Paris, 1890. pp. 304.

This second posthumus work of the talented author urges that paternity is incomplete without education, and that there is no greater egoism than that of parents who educate their children to please themselves rather than to develop the tastes and abilities of their children. Education is the art of adapting new generations of men to those conditions of life which are the most intense for the individual, the most extensive for the society, and the most fecund for the species. The antinomy between individual and collective *summa bona* is as harmonious as that between general and special culture. Education must aid heredity in creating durable superiorities. Disequilibrated people are lost for humanity. Hypnotic suggestions may implant artificial instincts and rectify bad heredity. Suggestion in the hypnotic state is, in fact, nascent instinct, and is a most extraordinary new agent for moral therapeutics. It can install a new elementary will which believes itself autonomous and free. It may thus bring moral as well as physical constraint, and even create artificial duties. Indeed, even our instinctive conscience is a sort of hereditary suggestion. The individual feels himself another than he is, and this modifies his personality and makes him more capable of good and less so of evil. Imitation, which is so powerful an agent, is faint suggestion, and every act tends to increase habit and automatism. Life is the action and re-action upon each other of hereditary mechanism and intelligence. Example, command, authority, gesture, are *suggestions*, affecting this action and re-action in the realm of sensations, sentiments, ideas and volitions, favorably or otherwise, according as they are wisely chosen.

The power of habitudes may give way to either momentary impulsion or to durable obsession. Consciousness makes our adaptation more flexible and from a larger environment. An act of the moral will is a re-action of the entire personality, and does not proceed from a detached state of consciousness. Education is the development of will-power. Every idea contains the germs of a duty. The feeling of obligation is a measure of ability. Those who lack power do not have it. Prolonged "inner tension" increases "idea-force," and makes it voluminous, while action dissipates it. Duty is a sense of inner power, or is engendered by it. Not only must all the elements of our own personality be involved in a moral act, but it must widen to social solidarity. Moral dissolution, or dis-education, is represented by five stages: 1. Purely negative morality, where good and bad tendencies neutralize each other. 2. Moral atony and caprice, the impulsive temperament, the absence of antagonistic states, tend to "aboulià" or paralysis of will. 3. Moral madness, or abnormal impulsion. 4. Moral idiotism. 5. Depravity. The Herbartian tendency to "maximation," where heredity and education agree and culminate, requires that a child be eugenic, and reared in an environment tending to moral habits. There is now a "physical morality." The greatest enemy of physical health is sedentary life, and the chief enemy of psychic health is inattention. The former tends to prematureness. The teacher should control all the attention of the pupil for a short time, and then leave the pupil to repair the lost energy. The French internat was artificially induced by the 6,400 prizes and scholarships of Napoleon I. The English is contrasted with the French system of secondary education, greatly to the advantage of the latter. The influence of education and progress generally upon natility is sad. Work, attention which is applied perseverance, continuity, instruction that is also suggestive, even cultivation of the much despised memory, which is not a faculty by itself, but one aspect of our entire organization, to provoke by every means the desire of action, and the avoidance of mere mnemotechnic knowledge, or psittacism, and the curse of passivity—these are vigorously pleaded for. Merely intellectual education, which may weaken the *morale*, should be supplemented by the State, which should teach moral and civic education in its relations, if not to confessional religion, to natural religion. The highest moral ideas are easiest popularized, and he who finds pleasure in vice, and pain in virtue, is a novice in both. Merely mental training de-classes socially. There must be a correlation between the intensity of life and its expansion to others. History, we may say with Tolstoi, wrongly interests, as art, from its dramatic, rather than its philosophic side, and geography should be a means of teaching the natural history of men, ethics and philosophy. They should both be moral repertories and teach patriotism.

Women have less reserves to restore cerebral exhaustion, and the genesic function is a larger part of their organism. The male expense in heredity is relatively slight. The history of an individual during the nine months before birth is the most important of its life, and would be the most interesting were it known. The more refined the education of a woman the less vitality have her children. The number of offspring, lactation, the length of the fertile period, the health, vigor and longevity of the children, are almost inversely as special intellectual culture in the sense of modern schools. Girls are more used to sedentary life than boys, and are more liable to over study. What blue stocking ever achieved the conquest of a manly man by her learning? The qualities that attract men are first physical beauty and secondly moral qualities. The proper and only science for women is pedagogy. But this is a comprehensive repertoire of the choicest results from all fields. Philanthropic occupations are woman's natural rôle, to which her education should tend. Politics, science and money-making are not her work.

The end of education is not automatism, as many scientific men claim, but conscious freedom. The ideal is not adaptation once for all to his environment, but a growing facility to re-adapt to new conditions, and to continue this re-adaptation by increasing previsions. Some say our pedagogy is root and branch wrong, because founded on the false assumption that information has ameliorating moral power. Consciousness is in fact the complement of organization, a centre of attraction for psychic forces. All painless sensations are a force, a stimulus. Consciousness simplifies "internal circulation." Every line clearly traced in consciousness becomes a possible track of future action and even character. Consciousness thus adds to our force an "idea-force" of its own. Genius encroaches in both directions upon the right of uncurious infancy and automatic old age. Let brain activity then grow from man to man till it absorbs more and more of our disposable energy and becomes our most vital part

La liberté d'enseignement et l'université sous la troisième république, par **Emile Beaussire.** Paris, 1884; pp. 360.

M. Beaussire was deputy during the decade beginning with 1873, and took part in the debates on the various bills for the reform of public instruction proposed to the Chambers in that period. He is therefore familiar with all the legislation of the third republic on this subject. He is always on the side of liberty, but is moderate in his views, and usually has some device for removing an evil which is not of the nature of a radical change. The book is made up of pamphlets and articles published by him from time to time on topics of administration in all the grades of state schools. His speeches, the debates in which he has taken part and the bills he proposed are contained in the appendix.

The third republic has done more than all former governments to diffuse and improve public instruction. Distinguished and even eminent men have been at the head of the department and have devoted themselves with untiring zeal to the interests entrusted to them. "How does it happen then," asks M. Beaussire, "that all questions have been raised at once, and that no one of them has approached solution?" The reason must be looked for chiefly in the false position into which the republic was forced in 1871 by the coalition of its adversaries under the flag of religious interests. The republicans in resisting the demands of clericalism allowed themselves to be dragged into a religious war, took the offensive, and, through intolerance and injustice, alienated the moderate party. Public instruction was the stake played for, and, while the clerical party was vanquished, the attitude of the moderates has prevented the passage of anything but half-measures. The state schools for superior instruction are threatened by the rivalry of the private institutions and are not in a condition to sustain the rivalry, owing largely to their organization. The reforms proposed as long ago as 1870 and agreed upon by all enlightened persons who have given their attention to the subject are, "The immovability of the professors; the autonomy of the faculties; the establishment in several large cities of schools in which all the faculties are grouped and united; an increase of endowments by the state." In addition to these four points M. Laboulaye has proposed a fifth, which commends itself to many,—the admission of free professors to teach in competition with the titular professors. Only one of these reforms is susceptible of immediate realization,—the autonomy of the faculties. Many intelligent persons are of the opinion that if this reform were completely introduced the private institutions would be useless. M. Beaussire admits that if the state schools were open to all men of learning and talent without distinction of opinions or doctrines, and if the most complete independence in internal government were assured them, no other schools would be necessary. But this is an unrealizable ideal. The old universities that the Revolution suppressed held the monopoly of instruction, and are looked upon by Mgr. Dupanloup and M. Paul Bert as the type of free instruction. But liberty then was a different thing from liberty now, and even now when liberty in school is advocated no one really means to open wide the doors of the public establishments and admit all doctrines to struggle in the breach. The question of liberty of instruction might perhaps be solved if it could be separated from the question of the manner of conferring degrees. The university degrees are not only evidence of creditable completion of courses of study, and consequently a title to public consideration, but, in addition, are the exclusive condition of entrance on certain professions, of holding certain offices, and of the enjoyment of certain legal advantages. This is admitted to be unjust to private institutions, but there is at present no hope of a change. The difficulty might be removed in two ways, either by permitting all schools to grant degrees, or by restricting the power of conferring them to special juries, as in Germany and England. The first method is not practicable because degrees which anybody can bestow are worth nothing, and the second can not be realized until there has been a revision of the laws which regulate the practice of the professions. The Chambers have repeatedly discussed bills relating to the subject, but there is no hope of a result. The actual state of things is not so bad as it might be, however. There are certain free schools holding no position of competition with the state schools which without offence establish their own examinations and count on their being respected because their equivalent can not be had elsewhere. Such are *l'Ecole libre des sciences politiques*, *l'Ecole d'anthropologie*, and *l'Ecole libre des sciences religieuse*. One of the large special schools, *l'Ecole centrale*, gives diplomas which, while they open the door to no career, are highly valued in industrial occupations and in certain public offices.

More than twenty-five pages are filled with a discussion of the topic of moral instruction. Lay morality, distinguished alike from natural morality and theological morality, is stated to be the basis of public instruction. It is not like natural morality a simple matter of individual beliefs and philosophical theories. It has an official character and becomes one of the fundamental institutions of the state. While moral instruction is required in all grades of schools the programmes are liberal enough to leave to the masters all the independence of thought compatable with their duties towards society and the families represented. M. Janet is quoted as comparing moral instruction with literary instruction. Morality reposes, as literature does, on the distinction between what is low, and what is elevated. The books on lay morality published by the members of public instruction are highly commended for their fidelity to morality and duty, and their large and sincere liberty of thought. Of the manuals on the duties of citizenship the same thing can not be said. The patriotism which they teach is too narrow, too factious, and too much tainted with hatred of other nations.

The domain where reform is most difficult is that of secondary instruction. There everything is a subject of controversy. Beside all the pedagogical perplexities of other nations France has to face problems of religion and politics and the difficulties, perhaps greatest of all, growing out of the fact that all the lycées outside of Paris are boarding-schools. All shades of opinon are to be found among educators as to the usefulness or necessity of sending children away from home to be educated. The extremes are those who would continue the present method, and those who hold the opinion of M. Renau, that "The public boarding-schools are barracks. The church, the monastery, the college of the middle ages (very different from our lycées) have in their manner educated men, and created a type of education more or less complete. One thing alone has never educated a man, that is the barracks." M. Brial shares this opinion and calls life in the lycées "the life of the cloister imposed on children," but still believes that it is demanded by the public, and that no other system can at present be substituted for it. Our author thinks the gravest evils would be removed if the two departments of boarding and instruction were separated. He would give to each its buildings and its administration, or, where it is possible, place the children in families. The special schools give satisfaction to nobody at present. The drift of what is said on necessary changes in them is in favor of borrowing from Germany the distinction between the classical gymnasium and the *real* or scientific school. In this case it is recommended that the scientific type be imposed on the communal colleges and the greater number of lycées, since this type most readily lends itself to the needs of families in general and to preparation for most careers. Paris and a few other large cities would of course have both types in distinct establishments. The bachelor's degree is conferred at the end of the course of secondary instruction, and like other degrees is the only avenue to many careers. The examination for this covers the work of ten years, and not more than half the candidates pass it at the first trial. If, as is frequently the case, the deficiency is in early preparation it is extremely difficult to make it good, and complaints of severity from the parents on one hand, and of indulgence from the professors on the other are frequent and bitter. Moreover the degree loses much of its value when it is bestowed after seven or eight trials simply as a reward for praiseworthy efforts. The remedy most likely to be effective and most feasible from the practical point of view is, in the opinion of M. Beaussire, to enforce the practice of passing pupils from class to class by examination. This would eliminate the insufficiently prepared from the higher classes, and make it easier for a disappointed candidate to prepare himself for a new trial. There is a regulation to this effect, but it has been impossible to enforce it because the faculties have been afraid that pupils would go to the private schools if they were rejected in the state schools. It will be necessary therefore to impose the same rule on all schools. The evils of examinations on which so much depends are well stated. The chapters on superior primary instruction are criticisms of the bill of M. Bardoux brought before the Chambers in 1878 and relate to matters of administration. E. M. H.

Uber Schülerexcursionen mit besonderer Rücksicht auf grössere Städte. von HERMANN WENDT.

Our high estimate of the importance of the impressions made upon us in early years by the objects, the surroundings, of our birthplaces, of the home of our childhood, is reinforced by what psychology teaches of the process of intellectual assimilation, or apperception. No new idea is appropriated except it have some available relation to ideas already existing in the mind. Are the "home-ideas" not only the earliest, but by far the strongest and most vivid ? then they must be the most powerful for the apperceptional process. Hence the richer the home sphere of the child is, and the more manifold and clear are his ideas of the objects therein, so much the greater is his capacity for culture. Most children's knowledge, even of their home surroundings, is scanty and unsatisfactory. Investigation showed that of the school children in Berlin, in 1869, seventy per cent. of those it examined had no idea of the sunrise, fifty-four per cent. none of sunset; seventy-six per cent. had never seen dew; seventy-five per cent. had not seen a rabbit, sixty-four per cent. a squirrel, forty-nine per cent. a frog, fifty-three per cent. a snail, eighty-seven per cent. a birch tree, sixty-six per cent. a village, eighty-nine per cent. a river. If Herbart is right in saying that "children that have not seen anything, not observed anything, cannot be instructed," it is a serious and pressing problem how to broaden the range of home ideas and to give to these ideas greater definiteness. Object lessons in the school come short. Parents at home cannot, or will not, attend to the matter. Salzmann hit it when he put the question, as if it came from an opponent, "But you can't bring an ox or a donkey into the school-room, can you?" and answered it thus," "As you can't lead the creatures to the children, you must just lead the children to the creatures." That is it. We must introduce *excursions*. They are of great value, both for instruction and for discipline.

In geography, the best point of departure is the home region. This study makes great demands on the child's power ef imagination. The ideas of mountains, deserts. rivers, seas, forests, must be framed out of elements already gained by the learner from his own observation. Even globes and relief-maps are poor substitutes for nature, as supplying elementary notions Let the teacher take the pupils into the country outside of the city in which they live, teach them to observe the course of the sun, to know the points of compass, the direction of streams, the watershed, to judge of the time of day by natural signs, to know the "lay of the land," to tell the importance of a river to the country through which it flows, to become acquainted with an island, a peninsula, a moor, a wood. Now and then the excursion should be prolonged till the sun has set and the stars appear, that good beginnings may be made in astronomical geography.

History may be much better apprehended by some direct observation of different kinds of life, as of the farmer, the shepherd, and of the places in which important events have happened.

Most of all, the excursions will be of benefit in the department of natural history. An oak cannot be brought into the schoolroom, and it is poorly represented by a few leaves or acorns. Dead birds, insects, or plants show but little of the "history" of the living ones. Besides, the important thing is to get at the natural relation between phenomena and organisms, to see the individual objects as members of an organic whole. The plants of the swamp are different from those of the wood; so are the creatures. The stone in the quarry, where the effects of light, weather, water, atmosphere, upon it may be seen, is more than the mineral as the teacher describes it.

Again, the concrete and poetic element in speech comes out of first-hand acquaintance with natural objects, and the understanding of literature depends greatly on experience of nature's sights and sounds. And what a store of material does the excursion supply for the school "composition!" The pupil has ideas of things he has actually seen, and does not find it very hard to write what is really in his mind as compared with something he is trying to get into it.

Geometry means measurement of the earth. Let instruction in it begin with such measuring. The school-room, however, is not the "field." On excursions we may find the length of roads, the size of buildings, the dimensions of fallen trees, corn-fields, etc, the breadth and depth of streams. The learner ought to get his first ideas of angles, squares, figures in general, not from diagrams, but from objects. Arithmetical problems are offered in abundance in connection with measurements, and in the form of experiments with the length of shadows cast by poles of known length and by trees of unknown height. And instruction in drawing receives new life when pupils sketch objects in which they are already interested.

The free and natural intercourse between teacher and pupil during an excursion, and the opportunity afforded for observing the spontaneous activity of children, are invaluable aids to discipline. Attachment both to teacher and to the home region are likely to be increased, a more intense interest in nature will be gained, and the good effects on the health and freshness of the pupils are additional advantages. H. W. BROWN.

Three Essays by Karl Lentzner. MAX NIEMEYER. Halle, 1890. pp. 62.

The first of these essays, "Andrea Angiulli's Efforts for Educational Reform," written for "The Nineteenth Century," November, 1884, after calling attention to the wonderful intellectual awakening in

Italy, and noting the fact that changes there are revolutionary rather than progressive, as in Germany, gives a short sketch of the life of Prof. Andrea Angiulli, of the University of Naples who is the great leader of positive thought in Italy, briefly outlines his general philosophical views and then gives a most excellent abstract of his important work, "Education in Relation to the Family and the State," with acute remarks in regard to the general bearing of his views. The second essay, "The Value of Modern Psychology in Relation to the Science of Education," advocates the view of Lazarus that psychology is the mother of the science of education. As physics is applied to mathematics, so education is applied to psychology. The master whose duty it is to mould men should understand them as the gardener his plants. A knowledge of psychology is especially important now that it is becoming one of the natural sciences. The idea of separate faculties of the soul, and special individual capacity in one of them, is being thrown aside, and it is now recognized that there is an intimate relation and unity of all the mental activities, and that the higher, more complex and more refined are developed from the lower, more elementary, more animal.

The application of the three main divisions of mental activity, understanding, emotion and will are discussed separately, but the intimate relation between them is clearly pointed out. The modern theory that all intellectual activities are evolved out of subjective feelings of pleasure and pain has attained a high degree of probability, and is well suited to throw light on the theory of education. It is especially important in showing how attention and apperception, the principal factors in intellectual growth, are directed by the strongest feeling and acquired dipossition. The opposition in the old view of pure intellect, wholly spontaneous and sensation wholly receptive, is solved by the new, that makes each psychic state active in relation to the lower or earlier degree of development and receptive in relation to the higher stages which follows it. Memory is spontaneous in relation to sensation and receptive in relation to thought. As physiology shows that nervous and muscular energy and activity depend upon the complexity of the chemical combinations that have been formed, so psychological analysis shows that the higher and more spontaneous mental activities indicate the possession of greater psychic force, more intensity of feeling. Just as the physician cannot heal, but can only supply helpful remedies, counting for the rest upon the healing powers of the organism, so the teacher cannot transfer his knowledge and culture to the pupil, but must rely mainly upon the appropriating power and mental energy of the pupil himself.

Aesthetical and moral teaching is more important than intellectual, and much is to be gained for the school from the new psychology, which gives a more correct understanding of the feelings. Feelings are important in two ways: 1. As means and instruments to be used in teaching and training. 2. Materially, the feelings being considered as the aim and object of teaching and training. 1. The older psychology and crudest pedagogy recognized the first, but not in such a profound sense as the modern, which views theoretical knowledge as nothing but a consequence of feeling. Just as the natural scientist should have a scientific knowledge of the horse or ox, so the educator should have a scientific knowledge of the feelings. 2. The final aim of all instruction is to develop feeling. Whatever answer is given to the question, "Why are children sent to school?" "What is the object of education?" we arrive ultimately at feeling as the final aim. The teacher should understand all of the feelings and be able to determine the ennobling or degrading tendencies of each. Since all of the higher feelings are the product of historical development, the teacher as the cultivator of them is the "pioneer of culture and fosterer of the national life."

Progress in the training of the will is far behind that in the training of the intellect and the emotions. We must get a more scientific conception of the mental activities of desire and volition. The will is also regarded by modern psychology as the result of progressive development, and much pains is taken to discover the laws and history of its development. The general outline of its development, which has been discovered, is of much value in the direction and regulation of the will in education to a symmetrical development.

In conclusion, the author replies to those who would ask for educational doctrines without the science of psychology that the demand is as unreasonable as for the physicist to ask the same of the mathematician. The student of educational science must be a psychologist, just as the physicist must be a mathematician and must select and apply his knowledge of the related science in a similar way. The business of the educator is to watch the development of mind, providing suitable materials, and removing obstacles to growth, and he cannot do this without a thorough understanding of mental development. The author alludes to Hamlet, and asks how many can boast of being able to play upon the mind half as well as the most mediocre bungler on the pipe.

The third essay on "The Higher Education" emphasizes the importance of studying the phenomena of national life with a view of applying to them educational principles and thus rendering effective the efforts to remedy the imperfections of our times. The science of education should not only discover the laws of the development of the human mind, but should also guide this development to a practical end. Education has significance for old as well as young. "We must learn to realize that the *government*, the *church*, the *press*, *literature*, *art institutes*, *the whole of cultivated society*, and not the school alone, have each their respective tasks to perform in public education." The chief defect of our age is the ignoring of the fact that "whenever a higher mental life has power and opportunity to act upon a less developed one, it is bound to use that opportunity with the purpose of training it to advantage."

The mechanical, social, intellectual improvements of the past one hundred years have entirely altered the aspect of public education. The rigid discipline of family, church and state of a century ago has been relaxed, and if liberty is not to develop into license there must be inspired an intelligent appreciation of the duty and necessity of voluntary obedience to law. From bondage to freedom is the natural order of human development, both physical and mental, but greater freedom must be accompanied by the evolution of higher powers. "The end and aim of all education is toward freedom," but harm will result from gratifying it prematurely. The strictness of former times of ten so longed for is desirable, but not on the old basis, for there has been evolution, and instead of believing and acting according to custom and authority, men prove the best and act from voluntary choice. Although the more educated in this transition period are turning away from the church, yet the fact remains that the result of a natural and continuous development of the intellect is to make man more religious. "One of our most crying needs is the establishing of our church life on a firmer basis," that church-fellowship may exert its powerful educational force, now so much needed for the correction of the moral evils of the times. "The people need education as much as the child does," and should be as carefully guarded from pernicious moral teaching. The phenomena of public life should be judged not only in their political, social or ecclesiastical aspect, but also according to their educational aspect, and results fruitful for educational discipline demanded of every public activity. The school can only influence the youth for the future, and even that influence is largely counteracted by the present outside influences. Pupils just graduated show the spirit of the age. Besides in the school itself knowledge is made too much of an end for itself and moral culture slighted.

The essays are valuable not so much for the new ideas they advance as for the new light in which they place old truths. Their harmony with the lasting results of scientific investigation and philosophical thoughts, and their relation to society, are clearly indicated.

E. A. KIRKPATRICK.

La première année d'Instruction Morale et Civique. Notions de Droit et d'Economie Politique (textes et récits) pour répondre a la loi du 28 Mars, 1882. Paris. pp. 179.

Education Morale et Instruction Civique à l'usage des Ecoles Primaires, Cours moyen et supérieur, par M. A. MÉZIÈRES, *député, membre de l'Académie Française, Professeur à la Faculté des Lettres de Paris.* Illustrations par C. GILBERT. Troisième édition. Paris, Librairie Ch. Delegrave, 15 Rue Soufflot, 1889. Tous droits réservés. pp. 176.

The first of these manuals teaches by brief, clear, dogmatic statements illustrated by short, familiar tales written for the purpose. It is evidently intended to be used progressively, since the first part is adapted to younger children than the last part. One questions, indeed, whether the last part can be profitably used in communal schools, but if the details of civil government and judicial procedure can be taught to children at all, it is certainly by the method here adopted. The short stories are, perhaps, a trifle naïve and idyllc, but they are excellent. Where so much wisdom is shown in giving instruction, one wonders that the immorality of making children promise never to commit certain faults, or form certain habits, is not discovered.

The second book teaches by short essays on the virtues inculcated, followed by admirably selected anecdotes from history and biography, some of which are taken from the reports of the committees who award the prize for virtue offered by the French government. The lessons on economy and government are less concrete than those on morals, and would be dull if they were not pervaded by the sentiment of patriotism subtly infused in the characteristic French manner. *La patrie* is conceived of as a real being, and the future citizen is constantly reminded of her losses and of the sacrifices she has made for him. Neither book touches any subject of controversy. Duty is always concrete. Temperance, cleanliness, ventilation, and the practice of gymnastics, are among the virtues, and self-respect, tolerance and delicacy find a place beside truthfulness, honesty and industry.

E. M. H.

Die Unnatur der Modernen Schule. Von H. WIGGE and P. MARTIN. Leipzic, 1886. pp. 335.

The "unnaturalness of the modern school" consists in verbalism and word cram, and in not following child nature, which is represented by Pestalozzi and Herbart, between whom there is none of the antagonism which their two hostile camps of German followers affirm. School is a torture chamber, a barren fig tree worthy the divine curse, because it does not follow and fit the children. The style of the book is smart, aggressive, but its movement is nowhere far outside lines familiar to readers of Ziller, Stoy and other Herbartians. About the eighth year the child stands in about the same will-relation to its parents that the patriarchs of the Old Testament did to God. The latter should then be the focus of education at that age. Later this instinctive subordination of the will to a higher authority becomes conscious, as in the time of the kings. The age of Jesus and the apostles and the reformation came later. Old Jewish history is thus the concrete history of the moral will. Upon this Ziller's system rests. Our authors insist that there is not the slightest trace of a tendency in the individual to repeat the culture-stages of the race—no nomad, stone or bronze age, etc. Nor is this true even in the moral-religious field. The maxims here are Christian and present first, and not ancient or oriental. The development of German races or children has properly nothing to do with that of the Jews. In his basal assumption that their history is in anyway normative, Ziller is totally wrong, although the biogenetic law may apply to mental life or history in a partial sense. Three convenient stages are the *imaginary*, or mytho-historic; the *real*, or study of nature and the present; the *possible*, or productive action. Few attain the last, and the interest of some centers largely in the first, which suggests the first of Comte's positivistic stages. There are also "apperception stages." These matters are far more important than the "merely mechanical" three R's. The cultivation of a will serving the highest moral ideas is the end of education, and instruction in ideas is religious, and God is their embodiment. The school reader should not be a mere chrestomathy, but should represent the psychic stage and standpoint of the child, and like all else, should aid in working over the child's real and ethical thought-spheres. Writing is a branch of drawing. Children must be interested in what they draw. No sound work should be separated from object work. Such abstract sentences or idleness is the rust of the soul. Alas for a child who can conceal its faults, etc., in modern language. Exercise books are as empty as logarithmic forms for children. Too much foreign language work is bad anyway. Language must never be an end with the young unless the syllables as mere noise are of interest. Yet the a-b-c-darian should take no thought of, or understand what he reads, while acquiring the technique of reading, and mechanism in the school-room has its justification. Thus only after the first two years of school-work should active instruction in things begin. Real instructian must be local and follow the seasons to be objective, and its end should be to know the accessible. It is morphologic, genetic, biologic, physical and chemical. Number work must be so closely bound to the concrete that the facts lead the pupil to decide whether it is addition, subtraction, etc. Systematic order of the matter of geometrical teaching is also rejected. Two detailed and very interesting plans of school work are given—the realistic, from the third to the eighth year, and the ethical, from the fifth to the seventh, both inclusive. The first begins with animals and plants, and passes to minerals, tools, dwellings, industries. The foci of the fifth year, e. g., are the brook, the meadow, and the vegetables, animals and minerals found in them, Germany and forms. The sixth year is devoted to the forest, Europe and forms, etc. As many as possible of the hundreds of subjects are illustrated by references to poems, brief descriptions, etc., in a way that shows a very industrious, and as far as we have seen, judicious rummaging of literature, but text-books as such are not referred to. The ethical-religious program begins with parental and filial love, and passes to obedience, friendship, gratitude, "making up" after ill feeling, love of home, helpfulness, love of mankind, especially the poor, sick, unfortunate, honor, honesty, justice, purity, peacefulness, content, simplicity, self-control, respect and reverence, perseverance, the Christ-idea. The English school year is devoted to culture-history, e. g., the Germans, Greeks, Hebrews, Goths, Romans, Crusades, reformation, dark ages, cloisters and monks, colonies, trade, thirty years' war, French revolution, and finally the fatherland, beginning with the native town and ending in patriotism and the relation of man to God. Each of all these and many more items is illustrated by many select poems and literary references, including many to Bible, hymn and prayer book. All must be done by the familiar concentration method and by the well known formal stages of preparation-analysis, presentation-synthesis, combination or association, abstraction and systematization, and application or method. Special stress is rightly laid on synthesis. Analysis should in each case be like the exposition of a drama. This combines the *maeutic* of Socrates, the object-lesson of Pestalozzi, the "development process" of Diesterweg, and the "working over" process of Herbart. That people ever read without this "realization" is the new degradation brought into the world by the discovery of printing. The good must not only be recognized, but applied in will-arts. Thus all after school life will be an application, as what precedes was a preparation for what is learned in school.

Uber Abstraction, Eine Psychologisch-Pädagogische Monographie. Inaugural Dissertation zur Erlangung der Doktorwürde an der Philosophischen Facultät der Universität Jena. Von BRUNO MAENNEL, aus Halle. Gütersloh, 1890. Druck von C. BERTELSMANN.

The importance of abstraction as a mental phenomenon appears, when we consider that all systematic human knowledge and ability are the outcome of it. The stages through which it passes in the mental development of humanity, and which make stages in culture, are discernible also in the individual man. And in the education of the individual our object is largely to produce the psychical products known as concepts, because these best further the awakening of the mental powers and especially of thought. The ambiguity of the term "abstraction" makes advisable a historical survey of the views of it in the chief systems of philosophy. [Such a survey is given]. The prevailing view at present is, that in abstraction the attention is directed to some special impression among the various presentations of the senses, and that the content of consciousness changes according as the elements of conciousness are shifted hither and thither by interest, the great sceneshifter. In different minds the concept gained will vary according to the previous state of mind, and the ideas already existing. Some elements are left in the background on account of mental hindrances; other elements are brought to the front, as more easily apperceived or assimilated. Thus a concept, as of "a rose," is gained by a purely psychological act, and the concept is an empirical notion, varying in different individuals. It has at first only a moderate degree of generality; advances, by discrimination of elements originally associated, to something more specific; and then, by the discovery of agreements between elements originally separated, goes on to greater generality. With the activity of will the connections of ideas undergo change; the concept that was psychological becomes logical; is no longer merely subjective but being cleared from the individual element, may claim objective validity and necessity. Finally, metaphysical speculation may reach the ultimate abstractness in such a concept as "Being."

I. In the Development of the Race. The development of abstraction in mankind at large seems to confirm the view that there has been in general an advance from lower stages to higher. A Bakairi-Indian, to whom a mirror was held up for the first time, showed no surprise but nodded quietly and said, "Water;" and the others of his tribe, when they wanted to see the mirror, said "Show us the water." Some of the concepts of people low in the scale of civilization are fantastic. The sun is conceived as a ball of bright red parrot-feathers.

The lack of class-concepts appears in such facts as that the Algonquins have no word for "oak," though they have separate words for the various kinds of oaks in their forests.

Advance is made by taking some prominent individual as representative of the class. In this way a patriarch may stand for the family or tribe, a king for a nation. Ajax "stood like a tower," i. e., Ajax and his followers. Horatius (and all his house) "kept the bridge." The concept of "soul" or of "immortality" is at this stage as concrete as that of body: the soul that went away in sickness is called back. In regard to number, the concept even of "two" is weak in some tribes.

In ethical and social relations the early abstracts are empirical. The head of the family, or of the nation, is the source of ideas of right and wrong, through his commands. The various images of revered persons are gradually reduced to few, then to one; monotheism is a later development than polytheism.

Errors in abstraction are gradually corrected by closer observation and criticism, until logical concepts are attained. The Ptolemaic conception of the world gives way to the Copernican. Thinkers of superior ability reach abstractions of a higher order. The same process goes on in art, the theory of beauty, etc.

In spite of variations and set-backs (for the course of development is not invariably onward and upward), these three stages are apparent: (1.) The primitive results in abstraction are notions fantastic and comparatively empty of content. (2.) Psychical concepts gained from the accidents of experience. (3.) Logical concepts, involving a comprehension of the world by thought.

II. In the Development of the Individual, as shown in the Child. Here the source of our knowledge is chiefly psycho-genetic literature. The first general ideas are generated out of association, and such ideas exist earlier than has been supposed. The idea of food, e. g., as any white liquid in a bottle, is gained long before speech is acquired; according to Preyer's observations, in the 31st week.

When a child uses a word in a new application, he discloses the nature of his concept-world. Some single quality is selected by him as the one common to several objects, and his selection often seems queer to adults. The word is not the name of an individual merely but has for the child a manifold content. The word "tree" with him may stand for a particular tree and at the same time may be a class-concept.

But not before the 6th or 7th year does the child reach results of abstraction that may fairly be regarded as general concepts. A child in the 31st week of the sixth year, to whom his mother had said "You are growing well now," answered "Growing is slow." The boy must have observed his body for a considerable time in order to express an experience of such generality as this.

As to the rise of abstractions of an ethical, moral or religious nature in early childhood, we have little material from observation as yet. The notions are at first crude and coarse but the environment has great influence. The beautiful is mostly the useful; the good is what has agreeable results; the right or wrong, that which is allowed or prohibited, and the idea of this in found in many children in the second half of the second year, or earlier. Religious notions depend on the influence of parents; we have no proof that the idea of God is innate in the child, and there is danger in trying to present religious conceptions early. The investigations made by Bartholomäl showed that only 26 per cent. of the religious ideas held by the children examined were available for use by them. Children, like savages, live in a sensuous world. Their schooling helps to transform their psychical notions into logical ones. We may make a two-fold division of the period of school life.

(1.) From 6 to 10 years of age the child may be helped to replace his dim, confused notions by clearer as well as more adequate concepts. His perception may be directed by selection and arrangement of material. The psychical mechanism is to be made serviceable to the intellectual, moral and religious development of the child. The ideas the learner brings with him are to be used as points of attachment for new ones; likenesses appear and are noted, unlikenesses disappear from the field of view, and the result is an advanced state of abstraction.

In art, the early drawing of a tree that may be *any* tree goes on to the representation of a fir or an oak. More accurate observation reveals the differences between fowls, or dogs, and clearer ideas are gained which become the basis of higher abstraction. Sense-perception is not yet thrust into the background.

(2.) From 11 to 14 years of age. Words come to be used more and more, rather than objects and pictures. Figures and symbols, like words, are the means of leading the mind on to logical concepts. The pupil begins himself to crave such concepts and often presses the teacher in the direction of them. Boys especially demand proofs and the establishment of logical relations. The teacher should select typical examples of things, in order that the elements disclosed by analysis may serve as categories. Through the increasing use of logical criteria, the essential and necessary are brought to light, and abstraction becomes a conscious act.

Yet this process is not rapid, and it is a common error of teachers to expect too much speed of the pupil in this race. Logical concepts that have been reached through the slow progress of centuries are not to be appropriated by youthful minds in a few school terms; and mischief is done by encouraging the youthful tendency to hasty generalization. This happens in the study of form and number, and likewise in natural science. The best teachers confess the impossibility of forming perfect concepts in the minds of pupils in the years of schooling. Mature minds commonly come short in this respect. The miller, says Lazarus, has but a vague, psychical notion of the mill; the builder of the mill has a clearer notion of it; but a logical concept is possessed only by the physicist or mechanician. Everybody has some idea of gold; the alchemist has a general notion of it; but the chemist (or in a different way, the political economist) alone has a scientific concept. Who has a scientific concept of man? is it the anthropologist, the psychologist, the zoölogist or the ethnologist? It would be worth while to ascertain, in certain circles of adults, how many among certain selected notions are to be reckoned as logically perfect.

The course of the advance of notions, from the psychical to the logical stage, in the individual, seems to be similar to that in the race. The demand upon pedagogy, growing out of this fact, is that it shall try to assist in this natural, gradual passage from the lower stage to the higher, especially by judicious selection and arrangement of the material to be offered to the pupil.

H. W. BROWN.

VIII.—SPECIAL PEDAGOGY.

The Geographical Exhibition of the Brooklyn Institute. The exhibition of geographical appliances by the Department of Geography of the Brooklyn Institute may be considered as marking the beginning of an epoch in the study of geography in this country. Many students, teachers and school officers improved the opportunity to see a representative collection of what is in actual use in the United States and nine countries of Europe. Here were found specimens of the maps of the Germans, who easily excel in cartography; of the French, who have made great strides in map-making since the Franco-Prussian war, and who sometimes sacrifice accuracy to artistic effects in color; of the English, who have shown a marked activity since the exhibition and meetings of the Royal Geographical Society in 1886; and of the U. S. Geological survey, which in conjunction with the State authorities has already completed topographical maps of Massachusetts, Rhode Island, Connecticut and some other parts of the United States. The exhibit of globes and tellurians was not especially attractive, though some of the more expensive were valuable pedagogic instruments. Excellent specimens of relief-maps, of which Switzerland is the "classic land," and models were present. Special mention may be made of Hirt's Geographische Bildertafeln and Hölzel's Geographische Charakterbilder. The latter are all in color and are prepared with great care from the best originals. The atlases of the Germans take the first rank, the Lydow-Wagner Methodischer Schul-Atlas being one of the most famous. Text-books, books on methods, books of reference and geographical periodicals were well represented. Among the most interesting were articles loaned for the exhibition by the geographical and geological laboratories of Harvard college, including plaster models and mounted photographs. The collection was first exhibited in the early spring, in Brooklyn, in May at Boston, under the auspices of the Appalachian Mountain Club, and it was expected that it would be exhibited in a number of cities. J. R. POTTER.

A Geography Plan for the Grades of the Common School, by C. A. McMURRY, Ph. D., of the State Normal School, Winona, Minnesota. Winona, JONES & KREGER, Printers, 1891. pp. 64.

This Plan provides a course of geography for five grades of the common school. According to the German custom of beginning the study with "Heimatskunde," the home forms the first great unit as the work of the third grade. Clear and definite ideas are formed of the fundamental geographical notions, based upon personal observation. Minnesota forms the important unit of the fourth grade. A steamboat excursion from Winona to St. Paul gives an idea of a great river valley with all its living pictures and associated thought." Other excursions are made through the State, board sketches are made and copied by the children and thus a series of typical geographical ideas is furnished. The States of the Northern tier then receive attention, followed by those of the Central and Southern valley of the Mississipi and are successively compared with Minnesota as to points of likeness and difference. A topic or two may be chosen in each state for special consideration, as "a bonanza wheat farm" in North Dakota, the Indian reservations in South Dakota, a cattle ranch in Montana. The work of the fifth grade includes the Eastern slope including the Alleghany mountains, the Western slope including the Great Central Basin, and mathematical geography. Here a bird's-eye view of the earth as a whole is given. The sixth grade is devoted to European states and their colonies and the seventh to the remaining continents and islands of the sea.

The merits of this proposed plan consist in maintaining and increasing interest from the beginning, in dealing with concrete objects at the home in order to give types, in training the observation, imagination and reason, in proceeding from the known to the related unknown, in the constant use of comparison, in going from simple to more complex units and in showing the intimate relation of geography and history by a series of pioneer stories running through the entire course. The author indicates that the earth as a whole might be taken as a starting point and interest aroused by the reading and discussion of "Seven Sisters," "Each and All" and similar stories. Of the five formal steps preparation, presentation and comparison are considered most important in teaching geography. J. R. POTTER.

The Teaching of Botany. At the Leeds meeting (1890) of the British Association for the Advancement of Science there was an interesting discussion on the teaching of botany. Prof. Marshall Ward, who opened the discussion, read a long and admirable paper. This paper was printed in full in *Nature* (vol. 42, 1890, p. 620), and has been in part reprinted in the *Popular Science Monthly* for January, 1891. In this paper Prof. Ward regards "the study of botany as approachable from three points of view. We may speak of three ends to be attained: those of (1) elementary botany as a school subject of general education; (2) advanced botany, as a subject of University or academic training, with a view to teaching and research; (3) special botany, for various purposes in after life, e. g., those of foresters, planters, agriculturists, horticulturists, brewers, medical men, timber merchants, etc." The author is a strong advocate of botany as a subject of general school training and delivers himself emphatically on this head. "The peculiarity of the study of elementary botany, properly understood and pursued, lies especially in the interest it arouses in the child's mind, and the ease with which it may be taught, and I would insist and re-insist on the fact that it stimulates and cultivates just those powers of accurate observation and comparison, and careful conscientious recording of the results, which are so needed by us all." Prof. Ward is no believer in the difficulty of obtaining material for class-work in botany. "The chief aids should be the parts of living plants themselves, . . . and in spite of the outcry that may be expected from pedantic town teachers, I must insist that every school might be easily provided all the year round with materials for study."

In considering botany as a subject of academic training, Prof. Ward distinguishes between the training desirable for a morphologist and that desirable for a physiologist, a view, however, which was warmly attacked by Prof. Bowen in the discussion that followed. The "type" system of instruction was believed to be in the main good, but should not be carried too far. The fern was regarded as the best and most convenient type for laying a foundation of morphological knowledge. "Indeed, I should be quite satisfied if we could depend on school children learning how to describe plants fairly accurately, and on the boys and girls in secondary schools knowing something more of field botany and how to use a flora, and having a satisfactory acquaintance with the life-history and structure of a fern and a pine." Higher special education must depend on individual needs, and full scope must be given for the development of originality. The question of technical botanical training was dealt with in a similarly broad and conservative spirit. The author insists on a thoroughly scientific botanical foundation as the only adequate preparation for technical work, and takes advantage of this position for several sharp thrusts at the "practical man." The discussion that ensued centered around the advisability of using a type-system, and the extent to which technical terms should be introduced in teaching botany to beginners. E. O. JORDAN.

The Study of Children, special course for University and School Extension. N. A. CALKINS, Syllabus and set of blanks for reporting. The chief purposes of this course are said to be. 1. To awaken in parents an interest in the observation of children. 2. To provide a course of observations and records for use in Normal Schools. 3. To suggest to teachers methods for the observation of the mental, moral and physical development of their pupils.

The observations are arranged under Nativity and Environment, Physical conditions, and Mental Faculties. Physical conditions are noted according to the suggestions given by Dr. Warner in "How to Study Children," and "Mental Faculty." In the observation of the mental activities the observers are referred to "First Three Years of Childhood," Perez: The Mind of the Child, Preyer: and The Education of Man, Froebel. About 150 observations are to be made upon sight, hearing, touch, taste, smell, muscular sense, voice, language, knowledge of common objects, color, form, number, attention, memory, imagination, self-consciousness, emotion, will, reasoning, association, oddities, temperament.

A smaller number of more accurate and more clearly defined mental tests would have the advantages of supplying more valuable data for the educator and the psychologist, of encouraging a greater number of individual observations, and of making such tests more practical in the schoolroom.

IX.—ACADEMIC.

Der Zudrang zu den Gelehrten Berufsarten. FR. PIETZKER and P. TREUTSEIN. Braunschweig, 1889; pp. 176.

These are the two essays out of 76 on the causes and cures of the over-crowding of the learned professions which received the prizes of the German association of real school principals and teachers. Lower officials and teachers naturally wish their sons advanced on the same lines. The industrial classes prefer law or the army for their sons, and so do sons of the clergy and of doctors, far more often than officers, lawyers and high administrative classes desire business, clerical or medical careers for their sons. External advantage is of course the chief motive, and indeed makes the indulgence of special ability or scientific taste possible. The passion for titles, the nimbus of difficulty which to the vulgar invests an examination, the scurity of a government office in Germany and its exemption from temptations to dishonesty (a motive powerful where mothers determine their son's careers), the almost feudal nobility investing all high government officials, a state constitution which requires all such office seekers to pass through the university, and which assumes that it is even more important to train leaders supremely well than to elevate the general level of intelligence among the people. All this has conspired to make Germany the land of schools, barracks, titles and bureaucracy. The higher institutions of learning were once shaped chiefly to train state officials. There is a freer field for that doctrinary theorizing so dear to the German soul, for an official than for a business man. School work is "writing table work" (or reproducing what is read or taught) and language work. School history is mainly political history. No one can be more wildly speculative or theoretical than a teacher. The so-called cultivation of science in higher institutions of learning is often only rude collections of data without that thorough working up which developes scientific judgment, or the most elaborate systematization in petty details, or elaborate proofs in mathematics which destroy that intuition power on which excellence here depends, or work with grammar and its rules. Such petty systematization destroys all the pristine freshness of apprehension and gives an appearance of learning at the cost of sound common-sense. Language work is too prominent in teaching exact sciences. Even those who go into business prefer trade to productive callings because there is more work with pen and paper. Burger-schools, designed to fit for practical vocations do not prevent the best young talent from drifting toward the so-called learned callings, till the vigorous development of business in Germany, for which international competition now requires the best talent, languishes. The æsthetic-literary training that culminates in word and language-work is too often mistaken for true culture which is far less external. Thus the fear of entering upon careers where all depends upon ability and constant activity, where serious demands are made upon intelligence and judgment, constantly increases. To give merely office reports, compilations and statistics the halo of scientific work done from an inner calling, and to call it real work in the realm of the humanities, the editing and re-editing of old authors, text-book making, popular editions, *de luxe* editions, digesting, commenting, criticizing, dishing up old matter for the hundredth time, and to call this literary over-production anything but commonplace book-work suggests the old satirical couplet, "Mother nature is kind and overwhelms all with what the heart desires: to the Frenchman she gives wine, to the Swiss milk, and to the German ink." Military exemption now requires essentially wealthy parents rather than talent. The remedy of Pietzker is a division of the gymnasial course at the point where the exemption examination falls, into a lower and higher school. The former should fit for this examination and also give as much practical and useful information as possible. The gymnasial course is far too long. The many who leave it before its close lose much, for it is a closed course, and it requires too early a choice between humanistic and real studies. The time and influence of the school proper must be reduced or vigorous originality will be lost. Excursions and more leisure must permit the natural influence of the environment to have its legitimate effect, and the nature, tastes and inclinations of the pupil to appear. Physical exercise will also aid against the "writing desk mania." Many of the best men have owed their vigor and originality to their exemption from school constraint in early life. Thus greater freedom would breed an independence that would make the life of an office holder seem less attractive. Not completeness, but germs and more real and less formal training is its end. The lower school or coetus would be more practical and real, while the upper would fit for the learned professions, but both should unite both tendencies, viz., that which studies nature and things, and that which aims at a fuller development of man.

Treutsein starts with Conrad's well known figures, viz., while between 1835 and 1860 the total number of German university students remained 11,000 to 12,000, in 1870 it reached 14,000, and in 1888, 29,267. Thus while in the 18 years ending 1888 the population increased 14 per cent., the number of students increased 111 per cent. In 1881 the number of theological students was 300 below the average demand, but supply hardly equals the demand. For 300 annual vacancies open for law graduates there were in 1881 about 500 qualified, but on the whole state by state there is no excess, nor if the country as well as the city is included is there an excess of doctors. In chemistry there is an excess. The surplusage of students are intent upon official and technical careers. The passion of knowledge is perhaps stronger, and energy now prefers this direction. More equality before the law inclines men to seek the superiority to their fellows, which birth no longer gives, by knowledge. General suffrage interests them in wider spheres, and free trade in wider markets. Increase in schools and universities, military exemption, the more scientific character of agriculture, increased machinery, and specialization of labor, social considerations, the fact that in Prussia there are 150 towns where only gymnasial and but 81 where only realistic schools exist, the remarkable increase in the last two decades in attendance upon intermediate schools; these all throw light upon the problem. But little over one-fourth of those who enter Prussian gymnasia graduate from them. During the last six years of all German nine-year courses, more than two-thirds of all leave. In Prussia but 27 per cent. who begin Greek take it through the gymnasia. There is then a vast surplusage (three-fourths) who begin but do not continue higher courses to an end, and hence great waste. To cure this evil middle schools must be entirely re-constructed, and while retaining the nine-years course must be unity (einheits) schools, but with intermediate goals, that nothing be lost for those who fall out by the way. Living must precede dead languages. Special university preparation and classics can be reserved for the last years which would constitute a section by itself. Gymnasia could gradually be transformed to this plan without revolutionary change. The lower section would give the right to one year's military service. This plan would also help technical schools and thus reduce the over-crowding in the learned professions. To prolong the university course, to try to make its tone more serious, entrance and degrees more severe, increase of fees would have little effect.

The American University. When shall it be? Where shall it be? What shall it be? By PROF. J. W. BURGESS, PH. D., Columbia College, 1884.

Now; in a great city; chiefly a philosophical faculty for non-professional specialization. Now, because we have a surplus of wealth, a body of qualified professors and students. We are richer than Germany, and although the college professor might be called a "hybrid somewhat between the drillmaster of the gymnasium and the university professor—too much of the former to be the latter, and just enough of the latter to spoil him for the former—he is really neither and belongs nowhere in a really scientific gradation of an educational system." To gather a faculty of really university professors in this country would be an exceedingly difficult task. Again very few of our 8,000 to 10,000 annual college graduates wish or are fitted for real university work. They may have more smattering of so-called general knowledge but have less real training than the graduates of a German gymnasium. The overloading and diversification of the old college course has greatly injured its value. Over-ambitious professors urge students to become discoverers before they have not only disciplined their powers, but even before they are solidly based in the elements and first principles of the special subject. Colleges that cannot become universities and will not become gymnasia will probably have no reason for existence. It will be a waste of money to maintain and of time to attend them. If we knew our needs and interests we might add two or three years to academies and high-schools and fit for universities better than the colleges do. By thoroughly searching the faculties of existing institutions at least one thoroughly good university faculty could be gathered.

There is one city which has the cultured public spirit and wealth to be the home of such an institution, viz., Boston. It must not be a government, but a private institution. The universal demagogism of our politics makes the State or nation utterly unfit to be its custodian. Once well organized, both corporation and faculty, should be self-perpetuating. Not only schools of law, theology and medicine should be united to the philosophical faculty, but even science. Separated from the humanities, science gravitates toward the methods and purposes of the polytechnicum. An university faculty of theology, if isolated, degenerates to a theological school, a faculty of jurisprudence to a law school, and medicine becomes a cram. Before we can have a real university in this country we have many difficulties to overcome, and shall find "many a hard pull ahead."

The Message of the Nineteenth Century to the Twentieth. A. D. WHITE.

The difference between ancient civilizations and modern Guyot held was that in antiquity one element or principle gained full mastery. This produced as in India and Egypt rapid and brilliant development and as rapid a decay. Now nationalities are far more complex. On the one hand now are Russia where monarchy subordinates church, press, science, letters; the South American republics where loose popular democracy rules all; Italy so long as the church was supreme. Contrast with these the balances of many diverse powers in Germany or England of to-day. Where would the latter have been if developed only along the ideas of Carlyle, Mill or Ruskin? In the United States the one dominant spirit of mercantilism is supreme, subordinating religion, art, science, literature, militarism. The message of the present to the future is, let no man fit for higher service in these fields put his talent at the service of the mercantile spirit. Then will our national life be kept free from decay from excess of this one dominant element.

The Plan of a Social University, by Morrison I. Swift, Ashtabula, O., 1890. pp. 40.

We have read this able paper twice but cannot understand an university which is "to bring every shade of character and intellectual calibre together," where the children of great and famous men shall "meet the children of their laundry-women," where there is no isolation from the world, which will accept no charities from rich men and will tolerate no board of trustees, scorning to dispense the doles of the wealthy, which consists of evening and Sunday courses with workingmen's recreations interspersed, but gives degrees, and which will make a new generation of scholars and will recreate the world. All honor and all success to "neighborhood guilds," "self-culture clubs," "bureaus of justice," libraries and lectures, people's palaces, courses of all kinds, but why this rancor against wealth and cloistered learning, and why insist for so loose and ununified an organization on the name of university? If culture is as exclusive as wealth why wish professors to dole out lectures and not accept "doles" from the rich. Is not this "extending" the name and the thing university till it has no meaning? To realize and modernize Brook Farm and a new Oneida Community and then unify them would be surely far less hard than to realize all these noble ideals in one institution.

University Education, by G. S. Morris, 1886. pp. 40.

This was one of the latest publications of its learned and talented author, whose untimely death was a severe blow to philosophy in this country. Plato's idea of an university with only one platonist for its faculty might take as its motto, *multum apud multa*. The synthetic idea which leads beyond detached science to unlimited views of totality is contrasted with the analytic idea of an university where any one can study any subject. For our author university means "the total realm of intelligent interests of men," philosophic self-knowledge which knows what one must will, which, as it is complete, becomes ethical and should make universities in very deed "workshops of the spirit of God." Our country is a child of ideas, political and religious; and freedom through truth, totality, oneness, the broadest, deepest, most complete knowledge mediated by professors of Greek and German idealism is not only indispensable but central in a true university. At the opposite extreme is found specializaton which forgets the imminent connection between the parts of knowledge.

Die Organisation des Höheren Schulwesens in den Vereinigten Staaten Amerika's und in England, by Dr. C. A. McMurry, Jena, 1888. pp. 101.

This pamphlet is published in the series of national economic and statistical treatises edited by Professor Conrad of Halle, and the author was formerly a student in Michigan University, and has gathered from familiar sources material for bold pragmatic statements about administration, expense of students' courses, female colleges, elective system, post-graduate studies, aids for students in America, and university reform, fellowship, extension, etc., in England. His material is conveniently arranged but is so general and commonplace as to be of no great service to intelligent people in either country.

MISCELLANEOUS.

Prof. W. Maurenbrecher, who lately succeeded C. V. Noorden, of Leipzic, in the chair of history, published his vigorous inaugural address. History, he urges, is the chief organ of "general culture," and is above and before all political. The higher the development of a people the more all embracing become the powers of the State. In times of *éclaircissement* and the French Revolution history and politics were farthest divorced. Politics was led astray by philosophy. But revolution is the negation of history. Government cannot be built on abstract principles but only on history. France has hardly yet recovered from the cosmopolitan philosophy of State by which she hoped to rule Europe but nearly destroyed herself. The true historic-political school of history, was introduced by Niebuhr, Savigny and Eichborn. Its purely objective study of sources precedes all because while there must be no stagnation but eternal progress, there must be no break with historic tradition. Knowledge of the past is imperfect without knowledge of the present and *visa versa*. It was the German historian that first made clear even to jealous rival German States that Prussia was to be their leader to unity, and that saved Germany from copying the English system of parliamentarism, which, good for England, would have been bad for her. History is more and more indispensable for politics and is seen to be so, and also for jurisprudence. This is also the standpoint of Rancke. Even in times of most rapid transition mediation between the old and new is needful.

Schmoller urges in a recent article that careful record be kept of the attendance of German students, upon lectures. The University he says has a duty to parents not to take their money for services offered but not accepted by their sons without informing them that such services are rejected. To itself the University owes the duty of so protecting the "right of freedom" that it shall not degenerate to the "right of laziness." In another recent article the jurist Rümelin urges enforcement of attendance upon seminary and repetetorial exercises. Bilroth advocates calling students at irregular intervals to describe previous clinics and if they are absent to cancel the entire semester. As "diligence" is one of the notes of all German leaving certificates as well as diplomas, the need of in some way noting attendance seems serious. A large number of members, or reluctant attendance, is opposed to the very idea of a seminary. Some years ago the government recommended that a few of the best Prussian professors send around a roll occasionally at their lectures on which each student present should write his name. The result was that not only Plato, Aristotle, Kant, etc., were present, but the names of absent friends were forged, just as some one responded "present" for them if a roll was called. Under the new order of the Prussian cultus minister professors are forbidden to certify to "diligence" (which is necessary for leaving) if in any way they have a conviction that the student has not been pretty regular in attendance upon their courses.

Pres. S. M. Coulter, of Indiana University, in an address on practical education defines it as special education along theline of one's tastes and inclinations. Courses of study must be *vertebrated*, i. e., must center about one study pursued for a long time in place of the many studies now common. If a student desires to know one thing well it is called undue specialization, and he is exhorted to be equally interested in every study. This latter crazy-quilt, *Meisterschoft* plan should have as its motto, *Umsteigen*. *Few studies, thoroughly done, and those few to the taste of the student constitutes a practical education.* The old classic course was simply one special course, and at its best was a good illustration of one elective as opposed to a maximum of subjects in a minimum of time. "Modern languages" is a general course, a good illustration of smattering. No man is a fit professor whose subject is not his life work. He must be known for, and stand for something outside his own college. If he does no individual work for himself in his department he is unfit for teaching, a task master and not an inspiration. The good teacher in all higher grades of academic work must be productive. In selecting electives, students who hesitate are advised to select the greatest and most productive teacher with little reference to what he teaches. With 14 weeks of everything every high school can call itself an University. This is called a "land of haste and sham, of wretched preparation, and foundation laid in sand." Election of courses or of on education is like marriage, for life, and for better or worse.

In an interesting article on Karl Follen and the German liberal movement, Prof. K. Francke sketches the revolutionary movements among German students, in 1815-19, more fully treated by F. Münch, K. Braun, H. Lee, Weitschke and Biederman. The *Burschenschaft* movement grew out of the freedom in act and speech bred by the Napoleonic wars and the violation of the liberal pledges made by the government. Its aims were national unity and it pledged its members to honorable and chaste lives, unlike the provincial *Landsmannschaften*. At Jena, where it had its chief home, student life and manners were greatly improved. The *Wartburgfest*, 1817, was to celebrate the revival of free thought and freedom from foreign oppression. The reckless acts of a few members caused the dissolution of the organization. Follen headed the sterner Giessen movement. Here both students and Boards were narrower, and murder and perjury were preached and be-sung by the former as the supreme virtues if in the service of freedom. There was a noble code of honor, and an holy "covenant of death brethren" pledged to the martyrdom of freedom. The desperate and almost nihilistic attitude was celebrated in a titanic song by Follen, in which a new crusade against tyrants and cowards was propigated with mystic symbols of holy consecration. After the assassination of Kotzebue, as a suspected Russian spy by Sand, and the murderous assault on von Ibell by another student follower of Follen, the Universities were press-gagged, and Follen fled to America, where, as a Harvard professor, the free atmosphere of the country mellowed his severity he was greatly loved and respected, and eulogized at his death by Whittier and Charles Sumner.

Prof. L. W. Spring says that between M. Arnold's assertion that literature is the greatest power available for education, and Prof. Freeman's view that it is not in itself a proper subject of University study at all unless associated with philology and history, the educational value of letters may be said to be still under discussion. The writer holds that literature *per se* is not a matter of mere taste, and not dilettanteism. The student must re-enact the intellectual and passional life of the author. A word must convey the meaning it had to the author and which he intended, and no other antiquarian or philological meaning. The student must work upon the text and have interest in it. Historical connections are closer, and differ with different authors but must still be subordinate. The lecture system is often overworked, and its devotees sometimes overlook the invention of the printing press. What *interests* the average student should be preferred to the drier if more schoolarly matter, and a text book, mainly for reference but not for recitation, should be used.

A. Lang, in his charming new book on Oxford has more than added another to the large library upon the subject. He has given a general, if sometimes sentimental view of his interesting subject. Oxford has been a microcosm of English educational life. The impulse to its thought has usually come from without, not within, but Oxford has fermented readily and promptly distributed the new forces over England. It is eminently a discontented place, and the discontent is mostly of the noble, aspiring and not of the vain ignoble kind. Most of the great excitements in all its history have been more or less religious, but all this is now fast changing and Oxford is becoming a huge collection of schools where men are learning and teaching with great vigor. It is a huge examining machine which works day and night. The work done by tutors is so amazing and so effective that it is little wonder that lecturing professors can hardly survive beside them. The endowment of research has never thrived for it would interfere with the "beautiful if useless" heads of houses. While doing its work now with much vigor, there is an undertone of feeling that perhaps nobler tasks are being neglected.

By the courtesy of the Bureau of Education we can state that the Benefaction to Colleges and Universities in this country during the year 1889-90 amounted to $6,006,474. This sum was divided among 225 colleges and universities. Thirty nine of these institution received one thousand dollars or less, and fifteen received over $100,000. The following received most: Harvard, $439,000; Wesleyan, $302,000; Yale, $262,000; University of Penn., $260,000; Colgate, $152,000; Tufts, $130,000; Colorado College, $122,000; Johns Hopkins and the University of Vt., $121,000 each. On the other hand Middleberry College, Vt., reports $50, St. Johns, Fla., $75, the State University of Iowa, $100. For previous years the Bureau shows the following total benefactions for colleges and universities:

1871	$8,593,740	1881	$7,440,224
1872	10,072,540	1882-3	7,141,363
1873	11,226,977	1883-4	11,270,236
1874	6,053,304	1884-5	9,314,081
1875	4,126,562	1885-6	5,976,168
1876	4,691,845	1886-7	7,512,910
1877	3,015,256	1887-8	6,646,368
1878	3,103,289	1888-9	6,942,058
1879	5,249,810		
1880	5,513,501		

The new calendar of the University of Toronto has an interesting sketch of its history and organization. Opened in 1843 it was first planned to be, like the University of London, an examinating body, but was soon able to teach. The federation law of 1887 which opened the way for other collegiate denominational institutions which had affiliated to federate, opened a larger career to the University as the center in fact of the educational system of Ontario. The Crown is the supreme authority, and is represented by the Lieutenant-Governor, who is visitor, appoints all instructors and administers the finances. There is a Board of Trustees of 10 members, the senate of 10 ex-officio members headed by the minister of education, 25 appointed and 20 elected members, the convention composed of all graduates and the council of professors. Fellows are paid 500 dollars but are chosen for teaching ability. A new era of development seems opening before the University.

Gen. Francis A. Walker says it is marvelous how quickly children can forget examination knowledge, and speaks of an "examination organ" which he compares to the third stomach of a camel which holds water long enough to carry the animal through a very dry time, or to the pouch of a Kangaroo. The best test of acquisition is to do the next thing; all bullion need not be Hall-marked. Rubbishy subjects may need it. Examinations will always be hated and hurtful, but always held to. The best technical education he holds equal to the best academic education. The latter often favors a false ideal, possibly yet lingering in the legal profession, by which a debater loves to defend a cause in which he does not believe, to make the worse appear the better reason, as in college debating societies. This would be impossible for a technical or scientific student.

The proposal of the New England association of colleges to reconstruct the course of study for grammar schools by reducing the time given to arithmetic, grammar and geography, and introducing in their place elementary physics, geometry and algebra, and demonstrations in natural history and offering an opportunity to study Latin, French or German after the age of ten is hardly less than revolutionary. Most who arecompetent to judge hold that arithmetic consumes too much time, that method is too prominent in relation to matter, and that these changes would not at least make matters worse, but would like to see geography not reduced but enlarged. Let the collegians now work out a program to the subjects they suggest that is feasible. The average superintendent and grammar teacher or master is incompetent to do it.

The Boston School Board prints this year again a list of authorized Text and Reference Books and Supplementary Reading Books. It is a pamphlet of 18 pages with hundreds of titles. These lists are made out by the Text Book Committee, but upon what principles or upon what method is known to them alone. The same committee select for all grades from primary through the High School. Some books on this list we know to be very good and some to be very bad. A text book should be stamped with the seal of official approval only after a prolonged and careful examination of as many as possible of the same grade. As with prize animals in an agricultural fair, the value of the prize depends upon the number offered and the fewness of the prizes. They judge by scrutiny of the animals themselves and not by what their owners say about them. Again no preference and not even any difference between books in the same list is presented. A method so bad can only produce results of little value.

The vote of Cambridge (England) University declining by a vote of 525 against 185 to drop required Latin and Greek was a surprise to the friends of the reform.

The *otium* of the retiring dean Liddell of Christ's Church College, Oxford, can never be *sine dignitate*. Dr. Paget succeeds him.

Professor Jebb is the first professor of Greek ever sent to Parliament from the University of Cambridge. As a parliamentarian, a wicked London journal predicts it will be a case of *fit, non nascitur.*

Dr. Crichton Browne exhorts medical students to live for a beautiful old age in themselves and in others. The increase of average longevity has been effected mainly in the first half of life and expecially in childhood. Senile melancholy and dotage are the rule and normal old age is very rare. This is due to wild oats in youth and the strain of modern life later. To win longevity is the work of a lifetime, and its promotion a branch of public medicine. There should be congresses of dotards for warning and healthful Ciceronian centenarians for encouragement. There should also be a point where general education ends, and special and professional training begins a "brain-conditioning house, where the staple of both intellect and character could be appraised, that men be guided to careers for which they are adapted, and thus one chief obstacle to longevity be removed."

In writing, fingers, wrist, elbow, shoulder must be held steady, the spine must be fixed and the pelvis firm, the thorax is rigid and the work is determined more by the work of the hand than by respiratory needs. The brows are knit and sometimes the tongue protruded. Thus nearly all the muscles are involved in the learner. Short sight and curved spine are caused by it. A vertical script and ambidexterity in writing would greatly reduce the dangers.

Scholars will look with unusual expectancy to the magnificent new Bible to be issued by Hinrichs of Leipzic in six octavo volumes. It is to be a new translation into Elizabethian English, with scholarly rather than with homiletical notes, by many eminent scholars of Europe and America. Where books are derived from different documents this will be indicated by ink of different colors. The work of scholars must be in the hands of the publisher June 1, 1892.

Prof. Kronecker, in his admirable biography of Helmholtz, gathers the latter's references to his own modes of work, from which it appears that the germs of the greatest of his original ideas have arisen in the dark background of his mind when he has been most apart from human life and in closest and most sympathetic communion with nature, particularly in the Alps of which he is so fond. "To him," he says, "who knows life only from books and paper, or who is tired by the monotony of work, such ideas come not." The investigator must have something of the poet's intuition. He must train for condition to get great fullness of life and power, as, e. g., by wandering in the pure air of mountains.

At the interesting inauguration of W. G. Ballantine as president of Oberlin, he urged that the American college was unique and based on the constitution and needs of man. It does not aim to exhaust any subject in its curriculum, but to give a rounded liberal-man-making training. The new president thus takes his stand in a square and noble way for the college as college.

Dr. Leo Burgenstein of Vienna caused four classes of children from 10 to 14, so work in simple arithmetic for 10 minutes, then rest five, then work 10 minutes again, rest five, then work 10, then rest five and work 10 again, making thus 40 minutes of work in an hour. Vigor and certainty gradually fell off during each period. He holds that children should work 45 minutes and rest 15 during all school time, but desires much further investigation as to how much strain children can stand without over-exertion.

The Colorado College Studies for 1891 is a pamphlet of about 100 pages. made up of 12 papers read before the scientific society of the college, The longest and most important is by Professor Loud on elliptic functions defined independently of the calculus. Several other papers are valuable. The pamphlet itself is a second annual publication, and reflects great credit upon this vigorous young college. It stands for a spirit greatly to be desired in more of our Eastern colleges.

President Adams of Cornell wishes a publication fund, that the fruits of research "be no longer regarded as the exclusive possession of the privileged few, but shall be imparted to the public at large," as a form of university extension. He would also have a good record at "a reputable college during the first two years to admit the holder to the junior class in any one of the universities." The colleges would then lay stress on the work of the first two years, and the universities could do their legitimate work of specializing.

President Hyde of Bowdoin contributes to the *Educational Review* for November one of the most important articles that have appeared in that progressive and representative periodical, on the policy of the small college. The opening paragraph strikes the key note of a contribution which should, and we hope will, mark a movement of the very first importance for higher education in our country. He says, "Now that we have the germs more or less developed of eight or ten universities, the colleges must prepare to take the second place in our educational system. To ape the university and try to spread over the whole field of higher education, or to be jealous of the university and set up as its rival, is equally absurd and suicidal. Its proper policy is to accept with modesty and self respect its new position; and by losing the old life of self-sufficient independence, to find the new life of membership in the highly differentiated educational organism of which the kindergartens are the feet and the university is the head." Presidents Carter of Williams and Hill of Rochester (PED. SEM. p. 106-7), have expressed views looking in this direction.

A. F. Chamberlain, M. A., has just published a convenient and useful pamphlet, entitled modern languages and classics in America and Europe since 1880. It is made up largely of brief quotations from some scores of eminent men, arranged by countries and in such a way as to show the historical tendency. In France, and still more in Italy, the Græcophiles are still dominant. They are less powerful in England and Germany, and have won their battle for modern as distinct from ancient culture only in Sweden. The author evidently believes strongly in "translated classics," and with Emerson would as soon swim North river instead of taking a penny steamer, as read classics in the original when he can get Bohn's translations. The dense and lamentable ignorance of classical literature on the part of those who have received a classical education, and the fact that the present study of the ancient languages is the greatest obstacle to a knowledge of ancient literature; that in the "modern diploma" Greek should be replaced by modern languages, and taught only in the university on a par with Hebrew and Sanscrit, and when taught should be taught as a living language; that Chipeway, Mpongwe, Nahnati with a verb of 865 regularly derived forms, and Santal, in which every verb has at least 3,000 forms, and especially Acchipwe, a language in which Brinton says "every verb is capable of eighteen million variations, all regular and legitimate derivatives" are harder than Greek—are impressive points. Dr. Whewell said mere classical reading is a narrow and enfeebling education, and B. Gildersleve says, "The vested interests of classical study are even from a mercantile point of view enormous. Not only teachers, but book-makers, have an heavy stake in the fortunes of the classics, and the capital invested in them reminds us of the pecuniary hold of Paganism in the early Christian centuries."

President Andrews of Brown would have university extension work downward as well as outward, and would bring into the college fit persons who could attend but a single study for a single term, thus increasing college population without lowering standards. He would give certificates on and degrees for such work, but would not shorten the course for the bachelor's degree.

A recent German writer says the cause for the "graduate proletariate," the "hunger candidates," and the overcrowding of the learned professions, is that having once begun a classical course leading to the university they cannot withdraw till they have completed the course and attained the distinctions of a degree without almost entire loss of all their preparatory course. The discipline, or brain-whetstone, argument is dead.

Professor A. S. Forbes says there are naturalists who must have nature sliced with a microtome, fried in paraffine, and boiled in corrosive sublimate, before they care for it. The ravages of insects cost Illinois farmers half as much as the entire system of public education. He pleads for the function of the old-fashioned naturalist who loves the fields, and the observation of animals and their instincts. Classification and a broad philosophy of life in general should come in.

Ex-President H. Davis, in the *Educational Review*, complains that State universities do not attract rich donors; that they must be open to all sexes and all colors. Members sometimes lobby for places on the teaching staff. A source of great weakness is holding open sessions of the governing board, where delicate and confidential matters are discussed. A State university is the servant of the public and may be asked to analyze soil for farmers, test water, ores and metals. In some State colleges but a third of those entering graduate. They will lean more to science than to letters, more to visible utility, to general more than to special training.

Professor Comey has shown in the *Educational Review* by one of the most thorough and pains-taking of recent pedagogical studies that the statement made by the majority report of the Harvard faculty as a basis of the argument for shortening the course that the number of students in American colleges is falling behind the increase of population in the country is radically wrong. His figures show the exact opposite, viz., that the proportional increase of college students has for a long time far exceeded the increase of population, and that thus the alarm felt by the friends of higher education on this score was baseless.

The Bureau of Education is now seeking to procure a complete set of text books in general abroad.

Dr. S. Sheldon says our science students go to Germany, 150 in number, every year, because laboratories and professors are better. He says Wiedermann's *Annallen* in Physics, and the *Jahres-Berichte* of the Germah chemical society "contain more original matter each month than is published in America during a whole year." Our professors, he says, are too often school-masters, and adds that we have but six prominent men in physics in this country, and two of these are in the government employ. American students, he thinks, have more ability than Germans, but they are in too much of an hurry to give themselves a good training and to make their work exact, and lack perseverance in research, and have too much Yankee love of bigness in telescope objectives, etc.

Professor Conrad says that of the total cost of the Prussian universities the state pays 72 per cent. and students by fees 9.3 per cent., the rest coming from the private property of the universities. In Oxford and Cambridge 42 per cent. of the total expenditures goes to establishments, e. g., hospitals, museums, servants, etc. In Prussia there is one professor to every 11 students; in Scotland it is one to over 50.

The plan for a new municipal school of medicine in Paris quite apart from the faculty continues to grow in favor. From the provinces has come a strong protest against abolishing the *officiat de santé*, which represents a sort of second rate medical diploma. As this was very much favored in the provinces, where the preparatory schools fitted for it, its abolition would only increase the now almost scandalous overcrowding of medical classes in Paris.

B. Meyer urges that certain good hours be kept free by statute for a few stated philosophic lectures for all students. That each professor be required to give once a year a public "*Haupt-Vorlesung*." He would make lecture fees (which range from 1,000 marks for medical students to 200 to 300 marks, or even less, for jurists), more equal.

A professor at Bonn estimates that among the 1,350 students of that university, dueling (which is illegal and therefore little known of), may be assumed to be liable to 200, impossible for 231, and improbable, rare, and decreasing with the rest. He commends the idea of settling disputes by appealing to a General Court of Honor, and advocates the dissolution of every corps that does not accept its decisions.

Many efforts have been made to unite the many local German student societies of the various universities by choosing a general board and investing it with certain powers. The difficulties in the way of this can be imagined when it is seen what labor is involved in bringing together even the corps of one university to, e. g., a *Kaïserkommers der Bnrschenschaften.*

Professor Marey, the physiologist, urges that in physical culture chief importance should be attached to natural exercises, like walking, jumping, running, games, etc., rather than to systematic gymnastics with special exercises of whatever sort or system, all of which are artificial. The latter are better than no exercises at all, but fit for nothing.

At the University of Basel, Prof. F. Heman holds a pedagogical seminary and lectures thrice a week on the history of pedagogy since the Renaissance, and Dr. Largiader lectures thrice a week on pedagogical psychology.

The difficulty in dealing with an old and recalcitrant convocation in Ireland was lately got rid of, after many efforts at reform had failed, by dissolving the old Queen's university and founding a new one in its place.

Genoa has opened a school for travelers with a program comprising ethnology, commercial geography, history, and a thoroughness commendable, but probably demanded only by travelers with unusual time on their hands.

At the great Swedish medical convention in August a large collection of portraits of eminent physicians, ancient costumes, and medical instruments, proved of great interest to over 400 attending physicians.

There are societies of pedagogy, school-masters' clubs or other teachers' Associations in New York, St. Louis, Boston, Chicago and in many other large and not a few smaller places in the country, but what are they doing for education? We have collected and read the constitutions or reports or proceedings of a number of these without very great edification. It is the old story in all matters educational, they try to do too much and so really do little. What should be done by some such society in every considerable town is first of all to rent one or more centrally-located rooms, and to provide means for a competent lady to give a fixed portion of her time to making a small, but very select collection of books, journals and illustrative apparatus. These should be selected from a wide international field, and their catalogue should be its proudest possession. From one to two thousand dollars a year would make a slow and sure beginning. Everything should depend upon quality, and quantity and numbers should be disregarded. This plan has been very successful abroad. Social reunions, once a week or month, lectures, conferences, etc., could easily be added.

Mr. William L. Gilbert, late of Winsted, Conn., lately left nearly 700,000 dollars to sixteen trustees of that town to establish there the "Gilbert School." The trustees desire to make it a model institution for secondary instruction. The money was left almost entirely without conditions, save that all teachers and pupils must be protestant. As no field of education is so unsettled, the trustees, all business men, have no easy task before them. We trust they will not become bewildered by the many functions—college-fitting, classical, realistic, manual, teachers, and other kinds of training and attempt too much, but will select a definite field limited enough so that they may be able to do the work extremely well. and leave other work to other schools. The income of one million dollars cannot cover the entire field of secondary learning. Everything depends on their recognition of this.

The new English bill abolishing school fees and replacing them by state grants went into effect Sept. 1. This radical measure is the last fruit of the act of 1870, and is probably the beginning of a more democratic and universal system of education. It started with the conservations and was not very strongly opposed, even by the voluntary or denominational schools. It may fill up board schools, and is sure to give the state greater control. The English is now practically one with the American system of education.

F. W. Hewes prints an interesting chart (*Christian Union*, August, 1891) showing graphically the increase of enrollment for the decade 1880-90, the increase of population and the percentage of enrollment to population. The West leads by far all the country in increased enrollment, save Nevada, which has decreased. Indiana, Maine, New Hampshire and Vermont have lost. Every Southern state also shows gain in enrollment. Virginia has added 10 to its enrollment for every 12 increase of population, and thus leads in this second count. In the percentage of enrollment to population the South, astonishing as it is, is already fully abreast of the North. This is probably partly explained by duplicate enrollment. Louisiana with 11, and Kansas with 28 per cent. of its population enrolled, are the extremes; in the West and South school enrollment has increased faster than population; in the North, slower. Of the 5,957 schoolhouses in Nebraska, 792 are of sod. These are cheap and warm. In New Mexico one-fourth of the schools are in Spanish only, and less than one-third in English only.

In 1883 an exposition of models of school buildings was held by the government at the Trocadero, Paris. This coincided with the remarkable development of school buildings in France, chiefly of primary at first, but more recently of intermediate and higher. These experts, who presided over this exposition, attempted. at the request of the government, to formulate certain norms or rules to be observed in the chief classes of school buildings. This effort, however, caused a certain apprehension on the part of municipalities. This, it was feared, would interfere with free competition among architects. Now all plans must be submitted to the government, whose architect, L. Sauvageot, approves or rejects or amends them all.

The university problem has been for years one of the gravest questions of state in Russia. Alexander I (1801-29) founded the universities of Kharkhof, Kazan, St. Petersburg and Odessa, restored Helingfors and Dorpat, (1692 Gustavus Adolphus). They later became such hot-beds of revolutions that Nicholas I was minded to close and replace them by military schools, and issued an ukase putting the professors under surveillance and withdrawing the right to elect rectors, suppressing certain classes, restricting to the clergy of the orthodox Greek church only the right to teach philosophy and limiting the number of students in each university to 700, and giving to the curator, usually an old soldier, autocratic powers. Alexander II (1855-81) emancipated the serfs and gave liberty to universities. Laws in Russia as in England are piece-meal. In England their contradictions have been used for liberty, but in Russia for oppression. Alexander then began a comprehensive codification in the "Svrod" in 1857, which led later to a reform of the judiciary and of criminal law. The emancipating university law of 1863 was passed, and in 1869 half a million rubles were given for scholarships in St. Petersburg, and private citizens created many more. All liberals aided the universities and they were thronged by the poor and discontented. Instead of developing a taste for disinterested studies they increased the strange fascination for nihilism. Hence the law of 1884.

In his very valuable studies in comparative pedagogy, entitled The New Education, E. Dreyfus Brisac finds a chief antithesis between individual liberty and the rights and needs of the state. Before the revolution education must first of all conform to the national spirit. France, the Fatherland and her needs were the touchstone. The revolution expanded all aims to universalism and the rights of man. Now coincidence and compromise between the different parties is the aim. A synpthesis of patriotism and universalism now often underlies the attempted adjustment between general education and special training.

The Belgian senator, Montefiori-Levi, who has done so much for the University of Liége, has just given a magnificent sum to build and equip a laboratory for electrical study on a large scale. Liége has been distinguished for electrical studies since the days of Gramme, and has trained many of the best professors in Europe in this specialty. With the young and already distinguished Professor Eric Girard at the head of the department its pre-eminence will be now all the more marked.

A. Dumont says that M. Bacelli's proposed scheme for a total reconstruction of Italian universities has met with great sympathy and secured for him many admirers in all Europe, although so radical a reform would perhaps be hardly practicable just now in France. There the trouble is that till lately both master and student contributed too little to the progress of science. Comparisons with what had been in other countries has had a most advantageous result. Faculties are not only teaching bodies, but scientific discoveries are expected of them. Only a strong taste for science justifies an university. The pedagogy of higher education he says till lately had been too much neglected in France. Some of the best movements in higher education have not been sufficiently praised by competent judges to lead students to see their worth.

Dr. A. Abbott says popular interest in law is increasing in this country, precedent is weakening, and the volume of litigated business is steadily increasing. Now the latest utterances of the highest courts are most heeded, formerly it was *earlier* decisions. English decisions are now rarely quoted, precedents are diverse and conflicting, courts of last resort are thus reinterpreting both common law and equity jurisprudence, while inventions and innovations in business and social usage cause controversies of novel kind. The student must thus be trained not only in what is settled, but in methods of dealing with the unsettled. It is not defect nowadays if a lawyer has to confess to a judge that he has no case in point. In questions thus open to treatment upon public merit or intrinsic justice often lies the golden opportunity for the American bar. The recognized grounds and premises now admitted as proper for the decision of open questions often constitute matter for a special course.

Carroll D. Wright says America has no counterpart of the European schools of statistics. Our statisticians have no training as a rule; take up the work *impromptu*; yet Engel, the great Prussian authority, says he would exchange the training of his famous Bureau of Statistics for the far wider field of work open in this country. Here the government permits, as his does not, inquiry into the conditions of the people and the progress of their industries. Births, deaths, marriages and other conventional subjects are about all that come to the hand of the continental statistician. Here however not only is all permitted, but the popular demand for statistics outruns the supply. Already this subject is receiving attention in our best colleges.

Prof. L. Jolly, in his history of the unique faculty of *state science* at Tübingen, which, although having its germs early in the century, was reorganized in the early seventies, shows clearly that the close association of the social and political subjects with forestry has been a help to both, not only in students, but in power.

Prof. W. Lexis of Göttingen has just published an article upon demand and supply of professional students in Prussia. His conclusions are represented in the following table:

Evangelical Theology,	1,320	2,712	1,392
Catholic "	860	811	-49
Lawyers,	1,840	2,821	981
Doctors,	2,675	5,019	2,344
Pharmacists,	350	600	250
Dentists,	300	206	-94
Philologists,	1,170	2,063	893
Mathematicians,	470	1,301	831
Total,	8,985	15,533	6,691

The first column of figures is the number of men needed to supply the vacancies arising each year. The second column is the total number of students in all nine of the Prussian universities in 1888-9, and the third is the actual surplus over the normal number. There is dearth of only catholic clergymen and of dentists.

Most of the medical schools in this country have no endowment. The Johns Hopkins is an exception. So is now the college of physicians and surgeons in New York, which since Vanderbilt endowed it, has been incorporated with Columbia College. The Philadelphia Medical School has lately increased its still very modest endowment, but has large hopes. The university of the city of New York is to unfold in a new locality, where its medical college can better participate in its expansion.

As long ago as 1884, M. Roche of the French educational budget was able to report as follows: "With regard to the increased expenditure since 1870 primary education has been raised from 8 million to 90 million; in other words, the expenses of primary education have been multiplied eleven times, while those of secondary education raised from 3 million to 16,852,900 francs have increased five fold. The expenses of higher education, the source of every science and progress, having been raised from 4,215,521 to 11,520,355, have only been a little more than doubled." Since this was written higher education has been greatly expanded.

Prof. C. O. Whitman seems to agree with Prof. Farlow that the student of science in colleges usually has had his faculties of observing and investigating blunted by bad training in school. Universities must move first and pitch their work in an higher key, not merely to drill, but to create. There must be more devotion to the unremunerative work of science. No organization which aims merely to provide what an uninstructed public asks can create or direct, but will only adopt and conform. It is elementary, though it calls itself university. The best teacher is an investigator; we must not longer pursue an university policy which discourages those who have a strong predilection for research, but must plant ourselves on our highest instincts and the world will come round to us. Argument has no effect on low grade institutions. They can only be leavened by the influence of high examples.

Dr. S. O. L. Potter of California, in his address at the 41st meeting of the American Medical Association, contrasting European and American medical education, is indignant with the German authorities for refusing to recognize the title of M. D. in American doctors studying at Berlin. To punish them he advises American students to withdraw from Germany and go to London, and he would retaliate by having us refuse to recognize foreign graduates. In England, besides a unifying law for all great Britain, there is the Council controlling all examining boards. Here there is no central or controlling power. In England the time required for consecutive medical study has just been raised from four to five years.

Ex-President A. D. White would see the university problem in New York solved by having the better colleges drop the first two years and give the work over to the smaller colleges. The former could then approach the character of real universities. The degree of A. B. would be degraded, but let each institution pretend to be only what it really is, and let rich men establish good fitting schools.

The widespread increase in education is seen in the many new educational journals (*The Pedagogical Seminary*, *The Educational Review*, *The University*, *School and College*), and several others promised for the year, and in the increased space given to educational subjects in the daily and religious press and the journals like *The Review of Reviews The Atlantic*, *Scribner's*, *The Forum*, etc. *The Independent* and *The Christian Union* and others often devote pages of a single number to half a dozen articles by prominent educators.

It is a fair question says Blondel in his great work on law-education, whether it is better to retain the now most sacred principles of liberty of teaching and of learning, and push 10 of the best in a class to the very top of their ability and leave 90 to the *laissez-faire* and mediocrity of common student life, or give all the strength of our institutions to plans, courses, examinations, obligatory attendance, etc., to raise the general level of mediocrity a little.

Higher education, says Dumont, is always in danger of becoming secondary education of a more refined order. The only cure, he adds, is more importance to original efforts, the fostering a taste for research and studies of a higher kind that have no immediate professional usefulness.

In every faculty, says a recent writer, there are many routine, hack professors who recall the simile in Cecil Dreame, of students buzzing like bees about a dried last year's mullein stalk. There are in every college and university in all lands many students with no love of knowledge, whose chief education is acquired by researches into ways of shirking work. Most of all perhaps academic subsidies have supported a number of subjects of study which are like an exhausted mine, which have lost not only interest, but all practical or scientific value, but are kept alive by academic "protection."

Prof. F. H. Stoddard says that just as 40 years ago each college professor tried to teach everything so now every college and university is trying to do everything. Each institution must specialize, will soon surely do so; presidents say the boy must go to college earlier; professional schools sometime say the college is hardly needed at all; the university must control and shape the college, the college the preparatory school, the academy, the district school, etc., and thus co-ordination will be achieved.

F. A. Wolf said the greater the professor, the more intimately and unreservedly he can associate with his students, and the less he needs any sort of *nimbus*. Like so many other able professors, he impaired and then lost his position because he was two uncompromizing to adapt himself to others. He could not make concessions, could work in no harness and at last fell.

Ouida says the present disposition of government to compel attendance at school, muzzle the dog, to ask its leave to marry, to vaccinate, to fill up census and other returns, is socialistic. We shall soon be made, she says, to practice Pasteur's inoculation, or use Koch's infusion. The latter breed fear, cowardice and nervous terrors that make us prostrate poltroons. The microbe is far too rare to justify the wide-spread dementia and hysteria it has caused, which are far worse than rabies. In return for all this the state permits us to go through the comedy of the voting urn. This is too trifling to atone for this vast loss of civil and moral freedom.

Josephine Shaw Lowell says there are 15,000 dependent children in New York city supported in institutions at an annual expense of one and one-half million dollars, who, after five to six years, are returned to their parents or the city but little improved. Manual training, tastes for and capacity to live in the country, health, industry, etc., are but poorly cultivated. She recommends that all be placed in the hands of a responsible expert, or at least a responsible board, which could easily effect great improvement.

The trustees of the Slater fund ($50,000 per year), for the education of the freedmen, at their last fourteenth meeting, decided to continue the policy of concentrating their aid upon a few of the best existing institutions. Thirty-seven institutions were aided. Clark university, Atlanta, Ga., received $5,000. "as an experiment," no other receiving over $2,500. The divorce of religion from character is so great that one colored leader lately said that three-fourths the Baptist and two-thirds the Methodist clergy were unfit mentally, morally, or both, to preach. Their ideas of Christ are so perverted that it injures their moral life. Their schools are injured by greed of numbers. Their education has so far developed wants faster than ability to satisfy them. The retiring secretary thinks the so-called "force-bill would have wrecked the negroes' chance of public education."

Mr. Fitch says the American school superintendent is inspector, minister of education, licenser of teachers and professor of pedagogy at the same time. That so precarious is his position that he is often not only ignorant of education, but really cannot afford to study it seriously; but must give much of his time to practical politics. The system is not only bad educationally, but morally. Of our private schools it is said that many of them are mere money-making ventures, the last refuge of men who have failed in other callings, or temporary make-shifts.

J. M. Rice, once a doctor, now a specialist in education, who has spent some years in studying schools in Europe, says the entire school system of New York city is unscientific and but little in advance of the middle ages. School boards should be composed of experts appointed by committees composed of college presidents and others, and should be salaried. The normal college sends out teachers "entirely unfit for their work." They can give but 10 to 15 lessons during all their course. Psychology and pedagogy are to the teacher what anatomy, physiology and pathology are for physicians. A period of probation should precede all appointments.

The National Educational Association was organized in 1870 by the union of the then three independent national associations. Since then it has published a volume of its annual proceedings. Of these but two—1870, 1872—are out of print. A classified list of the papers under 34 subjects is now published by the association in a pamphlet of 16 pages, with several hundred titles. Among many poor and cheap papers some very valuable ones are scattered. In turning over the volumes themselves a gradual, though very slow, improvement is manifest.

H. P. Warren says that at the age of 10 to 12 the elements of numbers and arithmetic can and should be mastered, and that the next four years, usually given to geography, history, grammar and arithmetic, are the lost years. These studies can be mastered incidentally, and Latin, French and German and imsutional geometry and simple English classics should fill these years.

M. L. Dickenson urges that our present educational system tends to produce a dead levil in the pupils. It should develop the real pupil as he is. The teacher of young children should keep in close relations with the mother and physician. Every institution should have in its faculty one person at least whose work should be to develop individual traits of mind and character.

Prest. C. A. Blanchard deplores the abandonment of family education by the home in favor of the school, and pleads for a restoration of the family altar, home Bible study, reading, etc. The abandonment of all educational interest by families has reached alarming proportions. Everyone should select some school to aid.

Ex-President John Bascom urges that those who send to parochial or other private schools are really taxed twice. As private schools are increasing this evil becomes greater. This is unjust, but the writer does not suggest a remedy.

Superintendent Greenwood of Kansas City measured the height and weight of 361 white boys and 363 white girls and 84 colored boys and 134 colored girls from the schools of that city, all between 10 and 15 years of age. Shoes and wraps were off in all cases. Only even years and no months are given. The difference between the two races was small. Malhall's dictionary of statistics, which was used for comparison, gives the heights of the English boy at the ages of 10 and 15 as 51.8 and 62.2 inches respectively, and the weight as 67 and 103 pounds. Mr. Greenwood sums up his conclusions from his very small numbers of children by saying: "The Kansas City children are taller, taking sex into account, than the average English child at the age of either 10 or 15, but weigh a fraction less at 10, but upwards of four pounds more at 15, while the average Belgian boy and girl compare favorably with American children two years younger.

Dr. Cohn gives tables of his own investigations and those of about 50 other specialists on hygiene of the eye. He concludes that in the whole civilized world the number of short-sighted scholars increases with the requirements of the schools and with the rank of the class. The figures varied from 1 per cent. in the village school of Schreiberbau (Cohn), to 80 per cent. in a private school in Vienna (Jäzger).

Sigismund would investigate such points as whether thick, strong children develop slower mentally than lean and feeble children; whether girls develop more rapidly than boys; the effect of climate, location, time of year, the physiological effects of schools, the development of language, etc.

Both Dukes in his new and readable work on school diet, and Blyths in his diet tables for school children, prescribe some sweets, mostly with meals, and would give some indulgence to natural cravings.

Professor Laurie of Edinburgh looks forward to the time when all elementary teachers will be prepared at the university.

The Leipzic Society of Pedagogy offers a prize of $75 for the best essay on pedagogical pathology in the sense of Strümpel.

A teacher in Spain who, like so many others, had not received the small salary due for a year or two, ends a long letter on the subject by expressing the hope that Spain will soon be conquered by a country that has some respect for education.

Secondary education in France has been so often changed, and scholarships are so commonly awarded upon the service of parents to the state, that attendance suffers and confidence is undermined. It seems a case of *morbus pedagogicus*, or the tinkering mania.

Eötrös says the only possible way to do anything for the moral education of the people lies in public school education.

Preliminary and later permanent registration for teachers is likely to prevail in England.

The question of allowing girls to pass the graduating examination of the gymnasium is to be seriously considered by the Germans.

At the old university of Kiel nearly all the buildings are now new. The chief are as follows, with cost in marks: Zoölogical Institute, 206,150; Anatomical Institute, 110,200; Chemical, 216,300; Physiological, 175,250; Botanical, 86,849; Library, 248,087.

Grant Duff said that in educational matters men must always be warned against the second best.

A recent English writer urges that university extension is liable to hurt the university without helping lower education.

The ter-centennial of the Dublin university, which falls next year, is already being arranged.

A rich widow, Holst, who died in Stockholm last June, left considerable property to the University of Upsala.

Jules Simon says: "Since our defeat by the Germans in 1870, every Frenchman has understood that our most weighty interest and our holiest duty was to organize and develop our educational system.

Greek opens the oracles of God and teaches man to dispise the common herd, said one of its elder apologists.

The General Council of London want medical degrees given only to those who have already a license to practice.

The cut and color of university hoods is now attracting much attention in Scotland.

The University of California has established a chair of oriental languages.

An English writer refers to the American system of education as many ganglia and no cerebrum.

The new Italian minister of education, Villari, has promulgated a very vigorous but economical policy.

The London Board of Trade refused a license to the proposed British Institute of Preventative Medicines because it might vivisect.

Mr. John Miller says an ideal university is a great manufacturer of working people, lawyers, preachers, doctors, professors for each college branch. It is a college and a bunch of training schools. Insist on only the best studies.

The proposition is made to divide the now dual function of the Prussian cultus minister to church and to education into two offices.

The recent international students' organization at Ghent attracted representation from most continental lands, and so serious and important were the subjects considered that a movement in this direction is predicted.

A government circular has been issued and posted at Leipzic requesting students of theology to attend lectures on pedagogy.

The society for the history of education in Germany, which is publishing the magnificent volumes entitled *Monumenta*, wishes more funds, and says the educational history of Germany has been but little explored.

James Bryce says no people ever gave so much thought to the development of its universities as Germany; none has profited so much by the service they render, and nowhere do they play so large a part in the national life.

DESCRIPTION OF RECENT ACQUISITION TO THE PEDAGOGICAL DEPARTMENT OF CLARK UNIVERSITY.

Köpps Lesetafel. This is a modification of the Plato-Dolztche "reading machine." It consists of a rectangular board painted black and supported by two braces; and has groves in which large letters pasted upon wooden blocks or the like can be placed. It is also provided with sliding wooden screens by means of which the number of letters shown may be regulated without removing them. W. H. B.

Born's "Neue Lesemaschine." This consists of a black wooden tablet and 28 wooden slides with letters pasted on both sides. In the back of the tablet are one horizontal and two upright grooves into which the slides fit; and in front is an opening made up of three squares through which the letters appear. The slides 1-7 are for the introductory exercises. Slide 1, with the fundamental sounds, is placed in the horizontal groove. The slides, with initial sounds (Anlauten), are used in the first vertical groove, those with final sounds in the second groove. The letters are very carefully arranged, and a large number of words may often be formed with a single fundamental and final by merely changing the initial sound; as, e. g., *eine*, *seine*, *weine*, *beine*, *deine*. The next group of exercises, with slides 8-11, involves syllables with two sounds; the group with slides 12-18, words of two syllables and three sounds; the group with slides 19-28, words beginning with capitals and words of three syllables. Among the advantages claimed for this "machine" are the ease with which it is manipulated; the large number of words that may be formed; the great diversity of exercises possible, and the fact that the formation of new words by the sudden change of a slide with an initial or final sound arrests the attention of children.

The purpose of the various *Lesetafeln*, *Lesemaschinen*, etc., of which these are samples, is to supplement or take the place of primers, and to avoid distracting a child by showing a large number of letters at once as in books. W. H. B.

Born's "Rechenapparat." This apparatus consists of a rectangular board, about two feet by three in size, on which are fitted ten tin slides. On pushing back each slide, ten circular openings, through which the black board appears, are seen on a white background. These openings represent the numbers from one to one hundred. Behind the lowest two slides are two small wooden shafts on which are painted red circles. By sliding the shafts in the grooves, the openings appear white or red at will. By manipulating the slides many different groups of numbers may be shown; the even numbers may be shown in a symmetrical, the odd numbers in an unsymmetrical group. By manipulating the shafts and the slides, a given group may be divided into parts; e. g., the number eight may be symbolized by three red and five black points, or by two red, three black and three white points. Thus the various processes of addition and substraction may be represented. W. H. B.

Tillich's Rechenkasten. This apparatus for illustrating arithmetical operations was constructed by Ernst Tillich, a pupil of Pestalozzi, and is described as follows in his own words: "My simple reckoning machine consists essentially of a hundred different blocks for the simple numbers from one to ten. To each simple number belong ten blocks. The ones, of which there are twenty on account of their more frequent use, are one-inch cubes. All other numbers in proportion to their size are longer. The twos have, therefore, the length of two inches, the threes of three inches, and so on, but the breadth and thickness remain only one inch. All of these blocks are in a box arranged for them, which is separated into ten compartments, each of which contains the ten blocks which belong to each number. Of course, the depth of each compartment depends upon the length of the block. This box is provided with a cover, which is so arranged that the inch blocks can be placed upon it in order that they may be grouped and separated in a different way." Very different estimates of the value of this piece of apparatus have been made by different educators. Stoy and others have recommended it most warmly, but the majority of teachers do not value it highly. Its serious fault is that it represents a number, for example *6*, by a block, six times as large as the unit cube, it is true, but still it is *one* and therefore not a direct symbol of six. W. H. B.

Dr. E. Dürre's Ziffertafel. This is a paste-board frame 16 x 22, with 9 sliding strips with eight figures each. All the fundamental rules of arithmetic and fractions can be taught on it at a great saving of blackboard work and of chalk on the part of the teacher by withdrawing or setting the strips, which move horizontally. An explanatory pamphlet goes with it. It is cheap (50 cts.), old, and still considerably used.

Table Féret Hygiénique. This desk may be raised to any height from 1 centimeter to 1 meter and 28 centimeters. Thus it can be adjusted to pupils of different sizes and permits work while standing. Not only can certain school tasks be done best standing, but this position permits a rest from prolonged sitting, the attitude is likely to be more correct, and it gives free play for the expansion of the thorax. In one form the desk may be placed either in a horizontal or a vertical position; thus the distance of 30 to 35 centimeters between the eye and the object can always be preserved; and in case of myopia this distance can be lessened. The seat accompanying this desk is merely a movable bench without a back; hence it is not suitable for prolonged work sitting. For sitting, a seat like Brandt's should be used, which may be dropped, can be adjusted to different heights, and can be placed at a minus distance from the desk according to hygienic norms. W. H. B.

E. Walther, *Bilder zum ersten Anschauungsunterricht*, 13x9. Schreiber of Stuttgart, who publishes these colored folios, began in 1838 by issuing a series in a German edition of 50,000 and had to translate and publish it in nine other languages. These have held their own against many newer series. Formerly teachers and parents wished single objects; now they wish groups with oral exercises. As thus associated with language work the pictures must be of familiar objects and adapted at the same time to those who live in town, country, plain, mountains, or by the sea. Groups and single objects must alternate yet be related. We have here three series: I. Miscellaneous scenes from life. II. Animals and plants. III. Geographical. Each series has 30 double page, brightly colored pictures with 100 to 200 words of description each, and all are dedicated to the late Empress Augusta Victoria. The art is unique. The first picture e. g., is the interior of a peasant's room, and shows bed, stove, family at meal, spinning apparatus, clock, baby in cradle, cat and dog, dolls, pictures on the walls, etc., with every salient point brought out with pedagogic objectivity. The kinds of food eaten, the rude painting on the cradle and the curtains, the sand on the floor, all stand out simple, yet clearly. Then comes a sitting-room of a well-to-do family, then two elaborate kitchens, one in the country and one in the city. A cellar, barnyard, forest, garden, harvest and snow scenes, vineyard, coal and brick, marketing, building, a water scene, etc., follow, all full of life and incident and with frequent supplemental pictures of single objects. Altogether we have here a new school of art the knowledge of which is not found in this country.

Bilder zur Deutschen Geschichte. These are in two series of 30 pictures each, 23x27 inches. The pictures are uncolored wood-cut copies in uniform size and finish by many artists, and with explanatory text pamphlets so copious as to be almost a brief history. These pictures were published soon after the Franco-Prussian war when national feeling and interest in German history were strong. As the work is intended for lower grades the biographic element is prominent, as the pragmatic should be for higher classes. The first requisite for a good teacher is that he should be able to tell a good story. If history is dull it is the teacher's fault. History must be picturesque in words also. These wall charts attempt to be correct in costume, surroundings and portraiture.

Bohny's Nenes Bilderbuch. This is an old and standard 11x13 inch German picture book with 400 colored pictures on 35 cardboard tables. It is designed to help children of from 2½ to 7 years of age to see, think, talk and arithmetize. It is much used for deaf mutes, and is more for families than schools. It deals with the most familiar and easy objects and should make children more attentive to their immediate surroundings. For so cheap a book the drawing and coloring are admirable. The questions under each picture are for the use of the parent or teacher in teaching the child to count and discriminate. It could no doubt be well used by an English child in learning German.

Schreiber's Wandtafeln. These are 9 linen-mounted, 36x30 inches, with copious explanatory text, and each table is divided into six distinct colored pictures. The first five are miscellaneous objects, sometimes several score per table, well colored and labelled and with a pamphlet of copious and judicious explanatory text. The objects are of the most familiar kind, from the bed room, barn, street, field, with many domestic and wild animals, birds, fishes, bugs, water scenes, etc., all as a basis of instruction and language work. The other four represent 12 industries, viz., tailor, baker, butcher, tanner, shoemaker, saddler, builder, lock maker, bookbinder, carpenter, wagon maker and butcher. On the left are the men at work, with colors in the foreground and many uncolored details in the background. On the right are about a score of the chief tools, named on the chart and described in the text. This latter series is in every way admirable, each picture of which excites interest in and opens up quite a mass of information.

Ehrenberg's Wandbilder, etc. Large colored Bible pictures, 24x31 inches, 12 from the Old and 12 from the New Testament, with an explanatory pamphlet of 107 pages by Schumann. The latter is Bible paraphase with quotations, poetry and song. The appeal is directly to the sentiments, rather than to the emotions, but the method is strictly narrative. All is drawn with attention to details with reed on heavy glazed cardboard. The set costs five dollars, uncolored four dollars.

Bilder zur Biblischen Geschichts. These are by Reichardt and are 27x22 inches, uncolored, ten from Old and ten from the New Testament.

Schnorr's *Bilder zur Biblischen Geschichts.* There are 30 in all, 28x24 inches, colored, and on material from both testaments.

Wilke's *Bilder-Tafeln.* These are 16 in number, 20x24 inches, colored, and have been worked over by Heinemann. Each represents a scene, and unlike some such series has a certain artistic unity.

Winklemann's *Auschauungs Bilder*. There are 8 large 36x30 inches, colored, linen and roller-mounted charts for class work in language, not only vernacular but like Wilke's, are sometimes used for French and English language work.

Scholz' *Grosse Thiere*. These are 65 colored charts, 16x14 inches, each devoted to one or more members of the same species, and with the name printed below in English, French, German, Italian and Dutch.

Engleder's *Wandtafeln*. These are a colored botanical series of charts, 24x31 inches. One, e. g., is devoted to the potato, with cuts showing roots, seed, flower, cross-sections, etc. The tiger lily, pine, oak, etc., are treated in the same way.

Hölzel's *Wandbilder*. These large pictures, four in number, 36x56 inches, are far more artistic than Winklemann's, but devoted like these to scenes from active life.

Engleder's *Wandtafeln*. This is a series of 30 large animal and bird pictures, 33x41. Many of the animals are natural size and all are natural colors. All are mounted on heavy paper with loops for hanging.

Eckhardt's *Wandtafeln*. This is a new and unusually elegant series, 30x42 inches, and is not yet complete. The honey bee and silk worm are particularly good, the stages of development and the work of each being shown.

Pfeiffer's *Bilder*. These are 12 colored tables, 26x36 inches, elegantly finished on heavy calendered paper, with illustrative text by Kehr. Somewhat more expensive than most such pictures ($6.00 for all). Each picture is to be associated with a well-known German poem.

Bopp. *Wandtafeln fur Noturlehre*. The first section of this interesting series contains 8 large colored plates of various sizes, illustrating lightning and lightning rods, telephone, phonograph and microphone, diving bell, fire engine, balloon, compass and locomotive. The illustrated text is a tiny text book of pregnant suggestiveness.

Meinhold's *Wandbilder*, 25x36 inches, contains one large animal each, highly colored.

Kafemann's *Bilder*, 30x38 inches, are complicated with scenery, etc. A distinctive feature is a series of patches of color on the margin, representing each color used in the plate, so that the series can be used for color work.

Fowler & Wells' *New Model Anatomical Manikin* is in the form of a large map, 18x18 inches. On opening it, the human figure, one-half showing veins and the other muscles, appears. On lifting the first flap two deeper views appear; on lifting the others, still deeper layers. Twelve other views around the edge, illustrating eye, ear, heart, stomach, throat, etc., and each also with flaps showing layers appear. It is admirable and cheap.

In the PEDAGOGICAL SEMINARY, page 93, a brief account of new canons of object lessons introduced into French schools, corresponding to our grammar school grades, was given. Since then, an entire collection of 643 objects has been placed in the pedagogical rooms of Clark University. The objects are mounted on slips of cardboard, and these fastened upon larger cardboards. Each object and process is named, and perhaps briefly described on the cardboard, and in addition is an explanatory pamphlet or text-book of 98 pages by C. Dorangeon. The set is called a Musée Industrial Scolaire.

Professor O. T. Mason's three large and valuable charts, 22x28 inches. The first represents Quatrefage's scheme of organic and inorganic nature, to which are added Topinard's types of mankind. The second schematizes Haeckel's ethnological types, and adds the classes of mankind by F. Müller and W. H. Fowler. The third is devoted to Welcker's chart of races of men by cranial indices, with the indices of various nations.

Ulmer's *Wandtafeln*. This series is of eight maps, illustrating telegraph, eye, air pump, hydraulic press, gas manufactures, etc., with text.

Hément's *Tableaux-Geographiques*. These are 12 elegantly finished colored cardboards, 16x24 inches, showing archipelago, canal, glazier, gulf, harbor, etc. They are designed to show not only illustrations of leading geographical features, but so far as practicable to depict actual scenes, No. 8, e. g., gulf and volcano in Naples, etc.

Die Deutsche Kaiser. This is a large table with wood-cuts of the 55 German emperors, beginning with Charlemagne and ending with William II. In costume and face they are copied from the most authentic sources.

Giertz's *Tafel*, etc. This is a large colored wall chart to illustrate the degrees of kinship, designed for schools. The 16 pages of text are none too full to make plain its complexity.

Lerscht's *Das Leben der Biene*. This is in the form of a book, 7x9 inches, but is a box under glass, containing a mounted queen-bee, a drone and workers, the grub in nine stages of development, various specimens of comb and wax, queen cells, artificial cells, bases, etc., in all 27 objects. It costs 10 marks.

Seidenzucht Kabanet. An inch deep box, 12x9 inches, with a glass top and containing 24 objects showing the life of the silk worm, from the egg and mulberry leaf, and the mature worm to the raw skein of silk—cost 20 marks.

Insecten-Sammbung. This is a case 17x14 inches, containing 150 familiar insects mounted and labeled under glass, at a cost of 23 marks.

Sternkarte. This fifteen inch cardboard, with a movable horizon, and with an illustrated pamphlet by J. Mayer, contains much information about the more prominent stars, constellations and astrognosis generally—cost 2½ marks.

The University has collected many large government ground plans, draft plans and photographs of elevations of newer academic buildings, —laboratories, clinics, etc.,—in various countries of Europe, especially in Germany. This collection is rare and has been much consulted.

RETURN TO▶ EDUCATION-PSYCHOLOGY LIBRARY
2600 Tolman Hall 642-4209

LOAN PERIOD 1	2	3
4 2-HOUR	5	6

RESERVE

2 HOUR BOOKS MAY BE RENEWED IN PERSON ONLY

DUE AS STAMPED BELOW

DEC 3 '82 -5 PM

REC'D DEC 3 '88 -1 PM

JAN 17 2004

JUL 12 2003

FORM NO. DD10A

UNIVERSITY OF CALIFORNIA, BERKELEY
BERKELEY, CA 94720

LD 21-50m-6,'59
(A2845s10)476

General Library
University of California
Berkeley

U C BERKELEY LIBRARIES
C036071121